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i2 Users Concerned About Vendor's Finances, Future

Problems continue to raise doubts, despite improved relations

BY MARC L. SONGINI
LAS VEGAS

Attendees at i2 Technologies Inc.'s annual user conference last week said the struggling software vendor has made noticeable improvements during the past year in how it treats customers. But a half-dozen users expressed misgivings about the myriad financial and legal challenges facing i2.

The Dallas-based company's woes deepened just four days before the i2 Planet 2003 conference began, when Nasdaq delisted its common stock on May 9. That move followed five straight quarterly losses for i2, disclosure that the supply chain vendor is reauditing its financial results as far back as 1999 and the news that the Securities and Exchange Com-

i2 Concerns, page 16

FROM THE TOP

COO Sam Nakane says i2 has made "profound changes."
QuickLink 38507
www.computerworld.com

Ameritrade's IT Integration With Datek a 'Religious War'

Postmerger CIO tells of internal debates over consolidation

BY LUCAS MEARIAN

Eight months after Ameritrade Holding Corp.'s $1.3 billion acquisition of rival online brokerage Datek, its IT department is emerging from the bruising experience of integrating some systems, ditching others and handing layoff notices to 250 IT staffers.

"It was a massive conversion effort," said Asiff Hirji, who took over as CIO of Ameritrade last month. He said the company has survived months of "religious wars" over technology choices and now runs its operations on systems spliced together by an IT staff that by September will have been reduced by about 40% — from 600 employees right after the merger to 350.

Hirji began working with Omaha-based Ameritrade last September as a consultant from Bain & Co. in Boston. His job was to find synergies between the technologies and IT staffs at Ameritrade and Jersey

Ameritrade, page 14

Users Outraged as SCO Stakes Linux Legal Claim

Vendor says companies using the OS may face liabilities because of Unix code infringement

BY TODD R. WEISS

In a startling development, The SCO Group last week put corporate Linux users on notice that they could become legal targets as part of its campaign to enforce intellectual property claims it has made on Unix. The threat outraged many IT managers but left some users worried about potential liabilities.

In a letter that was posted on its Web site and sent by mail to about 1,500 large companies, Lindon, Utah-based SCO claimed that Linux is "an unauthorized derivative of Unix" and that some of SCO's code has been illegally incorporated into the open-source operating system. It asserted that legal risks may extend to users that run Linux.

MORE ON SCO VS. LINUX

- Post your opinions about SCO's threat and see what others have to say in our online discussion forum:
  QuickLink a3180
- Read the letter that SCO sent to corporate users:
  QuickLink a3160

This is the third major punch SCO has thrown at Linux since January, when the software vendor said it was setting up a technology licensing division to ensure that users and vendors combined Unix and Linux code "legitimately." In March, SCO sued IBM, charging it with illegally using Unix technology in connection with Linux.

Joe Poole, technical support manager at Boscov's Department Store LLC in Reading, Pa., said Linux users "will not stand for this. There are just too many of us now." Boscov's uses Linux on an IBM zSeries mainframe to reduce the number of servers it has to manage (see related story, page 6).

Poole accused SCO executives of trying to use the legal maneuvers to increase Unix technology licensing revenue so they can "cash in when their company's failing." He

Linux Claim, page 57

KNOWLEDGE CENTER DEVELOPMENT

The Web Services Tsunami

FREDERIQUE BERTRAND

SPECIAL REPORT

CIOs say that Web services will create a tidal wave of changes in IT projects, from application development to CRM and supply chain networks. Are you going to sink or swim? This special report explains what's coming your way.

Stories begin on page 25.

ONLINE EXCLUSIVE

Make testing an integral part of Web services:
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NEWSPAPER

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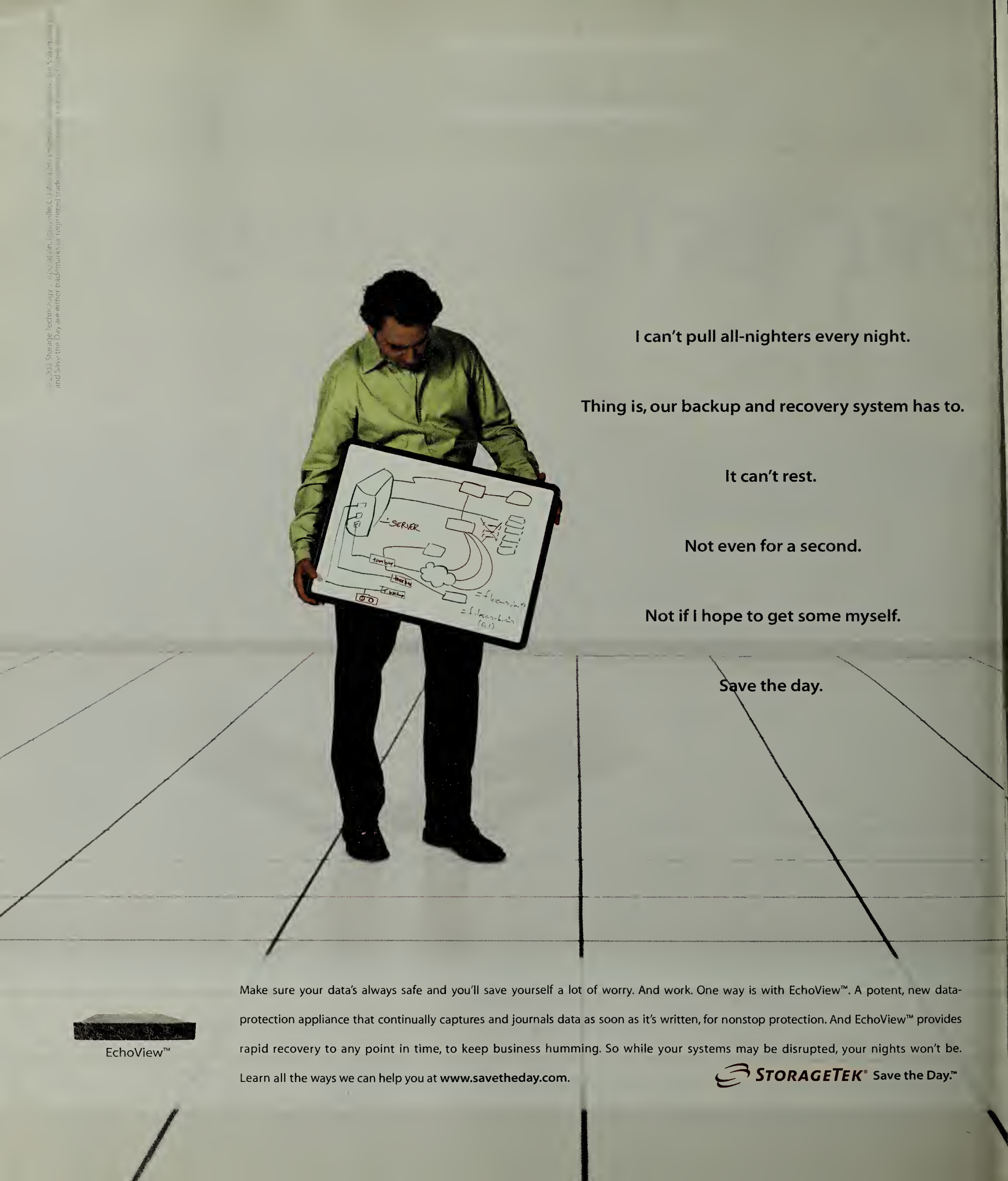
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KNOWLEDGE CENTER DEVELOPMENT

The Web Services Tsunami

Web services are already being used internally for systems integration and externally with supply chain partners. As one CIO put it, "Web services is a tsunami of technology evolution."

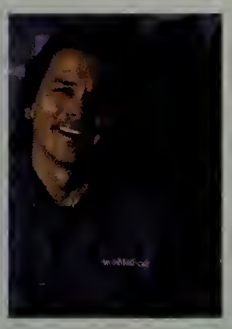
SPECIAL REPORT

PACKAGE STARTS ON PAGE 25.

26 **The Story So Far.** Web services are built on the shoulders of earlier technologies, such as client/server, EDI and remote procedure calls.

28 **Waves of Change.** PBS's Andre V. Mendes (right) says Web services will hit IT like a tidal wave, affecting a range of areas, including the supply chain. **ONLINE:** A former CIO discusses "what Web services can do for business intelligence." QuickLink 37326

34 **Opinion:** Web services are part of a long IT standards tradition. As such, be aware that they're limited in what they can do, writes columnist Mark Hall.



36 Web Services in Action. Pioneers like Wells Fargo's Steve Ellis (left) are exploiting this new technology to make valuable connections with customers, partners and suppliers. Here's what four companies have learned out on the bleeding edge of Web services. **ONLINE:** A small medical supplier uses Web services to launch e-commerce applications and gain an advantage in the mammoth health care industry. QuickLink 37822

38 **Web Services, Simply Put.** Are you finding it hard to explain Web services to your executives? In this book excerpt, XML expert Frank P. Coyle provides a primer on XML, SOAP and Web services.

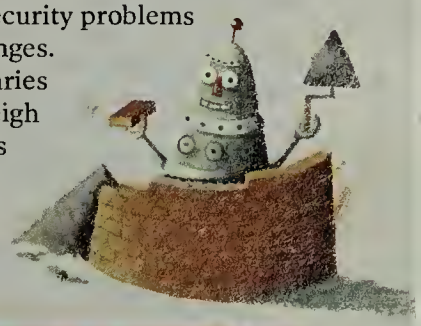
40 **Testing Is Key to Success.** Web services are computer-to-computer applications that must work flawlessly in e-business. Otherwise, a single error could propagate throughout the supply chain. Testing the software in advance can mean the difference between the success or failure of Web services.

42 **The Almanac:** Cobol gets freshened up for Web services, and an Antarctic data center uses ColdFusion. These items are among the tidbits in this collection of research and resources.

44 **QuickStudy:** A primer on Extensible Access Control Markup Language, a variant of XML designed to control access to disparate devices and applications on a network.

46 **Careers:** IT hiring managers say it takes a combination of new specialist skills and an aptitude for old-fashioned programming to make it in the brave new world of Web services.

48 **The Next Chapter:** Industry visionaries predict huge job losses for U.S. programmers and worry that a hodgepodge of Web services will increase information overload, security problems and management challenges. **ONLINE:** Industry visionaries such as Grady Booch weigh in with more predictions about the future of software development and Web services. QuickLink 38054



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Testing in an Organic World
Testing should be an integral aspect of developing Web services, so that we enable not only new dimensions of functionality, but also new levels of quality and reliability, writes columnist Linda Hayes.
QuickLink 38460

Use All Three Parts Of Project Estimation
Project estimation involves some guesswork, but these techniques from columnist Johanna Rothman will help you manage the uncertainties while evaluating a project and your team's confidence in it.
QuickLink 38408

Treat IT Applications Like Employees
Once you've designed, built, tested and launched your application, the project is done, right? Not according to columnist David Vellante. He says focus instead on an application's ability to deliver incremental value. QuickLink 38464

AT DEADLINE

SEC Scrutinizes Navy/EDS Deal

The U.S. Securities and Exchange Commission last week asked Electronic Data Systems Corp. for documents related to its $6.9 billion Navy/Marine Corps Intranet contract, according to a regulatory filing by the Plano, Texas-based company. The request came after EDS reported a $334 million pretax loss on the project during the first quarter [QuickLink 38326].

Dell Sees Strong Q1

Dell Computer Corp. last week reported that its first-quarter revenue hit $9.5 billion, an 18% jump over the same period last year. The growth was largely due to a 40% increase in server shipments. Dell also announced a four-year extension to a contract with Weyerhaeuser Co. under which Dell serves as the forestry company's primary supplier of PCs, servers and storage systems.

IBM WebSphere Expands Vertically

IBM this week is expected to announce 11 new or enhanced vertical-industry offerings as part of its WebSphere Business Integration platform. The products are intended to speed up integration among partners and customers in industries such as banking, chemicals and petroleum. Prices for the products, which are already shipping, start at $225,000.

Short Takes

ORACLE CORP. appointed Charles Phillips, an experienced Morgan Stanley software industry analyst, as executive vice president in the office of the CEO, reporting directly to Larry Ellison. . . . INTEL CORP. will unveil its newest chip set for premium desktop PCs on May 21, according to a source familiar with the company's plans. . . . SUN MICROSYSTEMS INC. and Oracle are slated to make a joint "low-cost computing" announcement today in San Francisco.

IBM Adds Mainframes With Up to 32 CPUs

New models double processor count, will let users add capacity on demand

BY ROBERT McMILLAN
SAN FRANCISCO

THE MAINFRAME may be a dinosaur, but it's a carnivorous one. That was IBM's message last week when it launched a new mainframe line code-named T-Rex that is capable of supporting up to 32 processors — twice what the company's current systems can handle.

IBM said the z990 models are built around a 16-chip processing module that helps provide a nearly threefold performance improvement over its z900 machines. With 512 I/O channels, the z990 also has twice the I/O capability of existing mainframes, according to IBM.

As part of the z990 rollout, IBM said it will reduce the number of its mainframe offerings from 42 to four. The first two z990s are scheduled to become available on June 16 and will support eight and 16 processors. Models that can accommodate 24 and 32 CPUs are due in October.

In September, IBM plans to release capacity-on-demand functionality and pricing for the new mainframes that will let users turn processing engines on or off as their computing workloads change.

"The on-demand aspect is really a step in a good direction," said Fred Betito, a director in the IT architecture group at Levi Strauss & Co. "Being able to just, over the phone, increase your capacity is something that is of great value."

Betito said that San Francisco-based Levi Strauss recently switched from Unix servers to a z900 mainframe to run the databases that support its SAP back-office applications.

The z990 is the result of four years of development work, done at a cost of more than $1 billion, said William Zeitler, senior vice president of IBM's Systems Group. Zeitler said IBM has added more than 100 mainframe users since the start of last year, and he claimed that 70% of overall zSeries sales are coming from customers running new types of workloads, such as using Linux to consolidate servers on mainframes.

Harry Roberts, CIO at Boscov's Department Store LLC, said the Reading, Pa.-based company has found the mainframe to be an ideal platform for server consolidation. Boscov's cut its 90-system server farm in half by transferring applications to Linux partitions on a z900, he said.

The z990 promises even better performance for Linux-based applications, Roberts said. "This isn't the mainframe of our youth," he noted. "This is a flexible, sophisticated enterprise computing platform."

Gordon Haff, an analyst at Illuminata Inc. in Nashua, N.H., said IBM's mainframe business has gotten a boost from its recent success with Linux, which the company claims accounted for 17% of its $3 billion in zSeries sales last year.

The z990 rollout furthers IBM's attempt to convince users that mainframes are still a relevant data center technology, Haff added. "IBM's making a real effort to introduce this as something that fits into the server line as a whole and isn't arcane," he said.

McMillan is a reporter for the IDG News Service.

PRODUCT FEATURES

IBM's z990

- A peak processing rate of **9,000 MIPS** on a full **32-processor** machine.
- The ability to scale from a **single CPU to 32** without shutting down systems.
- Support for up to **30 logical partitions**, twice what current models offer.
- A **256GB memory capacity**, four times what users now have.
- Up to **512 I/O channels and 16 internal TCP/IP links** between virtual servers.

Shark Array Gets New Disaster Recovery Features

As part of last week's mainframe announcement, IBM introduced several enhancements to its flagship Shark disk array, including support for long-distance data mirroring and for configuring arrays with up to 6.9TB of standby storage capacity.

The company also cut the 25% convenience charge users had to pay to configure standby capacity on their arrays down to 10% of what it would cost to buy the disk drives outright. For example, if the list price for the disk space being put in standby mode is $100,000, the convenience charge will be $10,000.

Once standby drives are used, users pay the remainder of the purchase price, IBM said.

IBM is also adding a new version of its FlashCopy software for the Shark arrays, which are formally known as the Enterprise Storage Server product line. Version 2 of FlashCopy can transfer up to 10 times more data than the previous release, and up to 12 different target systems can receive point-in-time copies from the software, according to Jim Tuckwell, marketing manager at IBM's storage division.

The various upgrades are scheduled to become generally available June 27, IBM said.

Mike Kahn, an analyst at The Clipper Group Inc. in Wellesley, Mass., said the new features could be significant, depending on a company's needs. The upgrades further automate functions that are available with more limited functionality on older Shark models, such as sending copies of data over thousands of miles asynchronously for disaster recovery purposes, he said.

For example, instead of storing an entire data set as the existing snapshot copy capabilities require, users will now be able to copy data on a transactional basis to backup arrays in separate data centers. Remote copies of data can be transferred across the country and cascaded to a second disaster recovery site for increased protection against data loss, IBM said.

– Lucas Mearian

Corrections

The first name of Tim Stettheimer, CIO at St. Vincent's Hospital in Birmingham, Ala., was misspelled in the May 5 story "Wireless Gets Down to Business." The story also stated that United Parcel Service Inc. was planning to roll out a new handheld terminal for its drivers early this year. UPS announced the DIAD IV on April 15 but said deployments will begin next year after testing is completed. In a related move, UPS plans to start delivering higher-speed wireless services to its U.S. delivery fleet this year [QuickLink 36717].

Another story in the May 5 Special Report on mobile and wireless technology ("Working-class Wireless") misstated the size of the product library that Sears, Roebuck and Co. loads onto the laptop PCs used by its service technicians. The library contains data on about 4.5 million parts.

Rational Software Set to Roll Out Rapid Development Tool

IBM unit supports visual-model-driven development for building Java apps

BY CAROL SLIWA

IBM's Rational Software division this week will announce a rapid application development (RAD) tool that's designed to reduce the complexity of building enterprise-class Java applications.

Rational declined to discuss the product's name, price or shipment date when it previewed the tool at IBM's developerWorks Live conference last month in New Orleans. But tomorrow the Lexington, Mass.-based unit will disclose that IBM Rational Rapid Developer is due for release next month and will sell for $5,995.

The tool goes beyond traditional RAD offerings in its support for visual-model-driven development and the Unified Modeling Language (UML), its use of prebuilt patterns for building scalable multitier applications, and its ability to simplify integration with existing systems, said Arun Gupta, chief technologist of enterprise applications at Rational.

Gupta said the tool, which Rational acquired last year from NeuVis Inc. in Shelton, Conn., can generate about 90% of the code for Java applications, leaving only a small percentage of business logic to be written by developers.

Steven Edwards, a senior manager at McLean, Va.-based BearingPoint Inc., said a team of developers working on new claims software for the insurance industry was able to automatically generate 65% to 70% of the application code with Rational Rapid Developer. The tool also helped the team cut development time by 40%, he said.

The application's size and the need to quickly get it to market prompted the development team to use the model-driven tool, Edwards said. "You can maintain consistency in your development standards, so when you make changes to your code, it will propagate through all your classes," he noted.

But how great an impact the Rational product will have among corporate developers remains unclear. Thomas Murphy, an analyst at Meta Group Inc., said developers are looking for tools that can ease the difficulty of building Java applications. But, he added, they will have to overcome fears that visual-model-driven development approaches won't scale or produce code that can be maintained.

Adoption of model-driven RAD tools has been slow because the products are just beginning to mature, said John Meyer, an analyst at Forrester Research Inc. in Cambridge, Mass. But Meyer predicted that the adoption rate will pick up as developers realize that their efficiency will be limited unless they start to rely on these types of tools to generate application plumbing code.

Rational will also introduce an automated software testing tool that is due by the end of next month and will sell for $2,995. The company also plans to announce enhancements to its XDE Professional design and development environment, which will now be called IBM Rational XDE Developer. New features include a debugging capability that will let users see application runtime errors and create UML models, plus integration of the Rational PurifyPlus runtime analysis tool.

In addition, the IBM unit will upgrade its Rational Unified Process, a framework of best practices for software development projects. Eric Schurr, vice president of marketing at Rational, said content will be added for functions like testing, data modeling and business modeling. Other features will make it easier to configure, customize and personalize the framework.

Coming From IBM's Rational Division

IBM Rational Rapid Developer: An integrated, model-driven RAD tool that the company says can generate up to 90% of the code for Java applications.

IBM Rational XDE Tester: Software that automates functional testing of Java clients and Web-based applications.

Vendors Develop Technology to Help Users Monitor Network Configurations

Software tracks changes, pinpoints errors for IT pros

BY MATT HAMBLEN

Two small vendors this week will announce network configuration management products designed to give IT managers greater control over switches, routers and other network devices made by different hardware vendors.

Rendition Networks Inc. in Redmond, Wash., today plans to launch Version 2.0 of its TrueControl configuration management software, which was initially released in December. Gold Wire Technology Inc. in Waltham, Mass., plans to follow tomorrow with the release of a pair of configuration control appliances.

Meanwhile, Austin-based AlterPoint Inc. last week announced an upgrade of its DeviceAuthority software.

Early users said the tools are helping them detect configuration problems that can lead to network downtime, which often results from human mistakes as simple as a typographical error in a router configuration command.

Jim Sherer, director of ASP operations at ADP Inc.'s Dealer Services unit in Hoffman Estates, Ill., installed Gold Wire's Formulator 200 appliance in February to manage and monitor access to systems that are maintained by 1,700 technical support workers.

Sherer said that if a network outage were to occur, he could use Formulator to track how configuration changes affected the overall network at ADP Dealer Services, which provides computer services to more than 16,000 auto and truck dealers in North America and Europe.

"Now we have the ability to say, 'We saw you came in and performed this adjustment,' " he noted.

Addressing Demand

Formulator can also be used to restrict technicians from making additional changes if they're causing network problems, Sherer said. But, he noted, one of his main goals is to educate ADP's IT workers.

"It's not a 'Big Brother is watching' kind of thing as much as a training tool," he said.

The market for configuration management technology is starting to take off because so many companies are putting more demands on their networks by adding Web services and data-rich applications such as multimedia, said Dennis Drogseth, an analyst at Enterprise Management Associates in Boulder, Colo.

Large networking vendors like Cisco Systems Inc. sell configuration management tools, but only for their own devices, Drogseth said. He added that multivendor configuration management products are currently being offered by smaller companies such as Rendition, Gold Wire, AlterPoint, Voyence Inc., Ecora Corp. and Intelliden Inc.

Chad Uretsky, a network engineer at NetIQ Corp., said the San Jose-based developer of systems and security management software this week plans to install Rendition's TrueControl 2.0 package. That should give NetIQ's IT staff the ability to automatically gather serial numbers from network devices to help with inventory audits, he said.

NetIQ has been using the initial version of TrueControl for the past four months.

"It really keeps track of configurations for easy recovery and changes if somebody makes a mistake," Uretsky said. "People are prone to make typos when configuring routers and switches, even the most experienced network engineers."

Product Details

Rendition's TrueControl 2.0 software

- Runs on Windows 2000 systems

PRICING: Starts at $29,990 for managing 75 network devices

Gold Wire's Formulator 200 product line

- Includes a 1U rack-mounted appliance with an 80GB disk drive and a cluster of two appliances with hot fail-over capabilities

PRICING: Starts at $25,000 for an appliance serving 50 network devices, and $100,000 for a cluster

AlterPoint's DeviceAuthority 1.1 software

- Runs on Windows NT or Windows 2000 Professional systems

PRICING: An enterprise edition starts at $7,995 and supports up to 100 devices

EMC Shifts Course, Offers Software Online

Users can purchase subscriptions for SAN design, performance analysis tools

BY LUCAS MEARIAN

FOR THE FIRST TIME, EMC Corp. last week made available a subscription-based software service built around its ControlCenter storage management software.

STORAGE

The Hopkinton, Mass.-based company unveiled two Web-based products, including a storage-area network (SAN) modeling tool that guides IT architects and administrators through the design and validation stages and provides a final blueprint or suggestions for upgrades based on user input.

"At the end of the day, the output is a complete end-to-end topology of your new SAN with proposed changes," said Pat Cassidy, director of marketing for EMC's open-software division.

Randy Carter, storage architect at Philadelphia-based mortgage insurer Radian Group Inc., has been beta-testing the SAN Architect technology and said it has cut the time it takes to map changes to his existing architecture from 24 hours to just four.

EMC also introduced AutoAdvice, which provides customized analysis of performance and resource utilization across applications, servers, databases and storage systems.

AutoAdvice is being sold under a one-year subscription that covers analysis of one to 50,000 CPUs, starting at $400 for a single processor. SAN Architect is also available on a subscription basis, with an entry-level list price of $2,400.

Others to Follow

Steve Kennison, an analyst at Enterprise Storage Group in Milford, Mass., said EMC is only the second major storage vendor to offer a diagnostic and alert tool of AutoAdvice's caliber. But Kennison said other vendors, such as Hewlett-Packard Co., Sun Microsystems Inc., Hitachi Data Systems Corp. and IBM, are likely to follow suit, because it will give them a larger software footprint in data centers.

Mountain View, Calif.-based Veritas Software Corp. in December signed a deal with Austin-based Motive Communications Inc. to resell its Enterprise Service Solution for Storage Networks, which resides on a server inside corporate firewalls and alerts IT staff to SAN problems. Veritas is bundling the tool as part of its business-critical support offering.

EMC's AutoAdvice collects information every five minutes about a company's SAN via a TCP/IP-based portal and collates that information in a database. A rules-based engine then measures best practices against what the SAN environment currently has.

The analysis takes a day, and results are returned to users in HTML-enabled e-mail messages. The reports show where current or potential problems are likely to come from and provide a graphical user interface indicating the severity of warnings from a high-level view.

They also include specific details on such things as CPU utilization and I/O throughput, Cassidy said. The analysis contains links to vendor Web sites for information on technology like host bus adapters and switches.

Cassidy said the results produced by SAN Architect can be viewed either with Microsoft Visio presentation tools or in Excel spreadsheets and can be kept online or printed out. ◗

EMC Goes ASP

SAN Architect and AutoAdvice offer:

- Remote diagnoses
- Remote alerts
- Suggested configurations of SANs
- Tests of SAN architectures against EMC best practices

READ ON

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QuickLink k1700
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Data Center Security Spending On the Rise, Surveys Show

Security projects get funded despite tight budgets

BY JAIKUMAR VIJAYAN

As director of global security at Hewitt Associates LLC, Dan Josephites is taking a multifaceted approach to bolstering defenses at his company, the largest human resources outsourcer in the U.S.

Firewall, antivirus and other intrusion-detection technologies are a key part of the strategy. But Hewitt is also shoring up its internal networks, performing network and application-level penetration testing and working with developers to ensure that the code on all Web-facing applications is secure. "We are spending more on security; there's no two ways about it," Josephites said.

And Hewitt isn't alone. A survey released last week by the Data Center Institute at Orange, Calif.-based AFCOM, an association for data center professionals, shows that in the face of constant terrorism alerts, the war in Iraq and proliferating cyberthreats, information security has become a bigger priority for the nation's largest data centers.

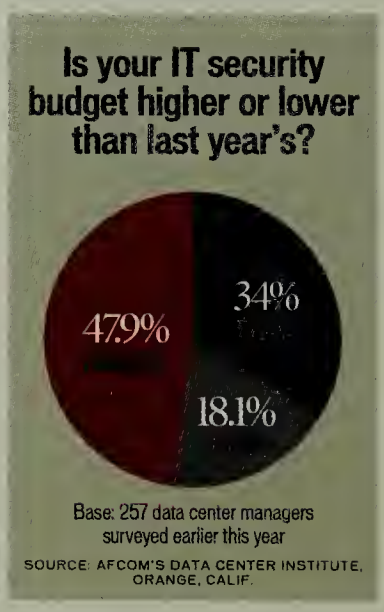
According to AFCOM, nearly half of the 257 data center managers it surveyed earlier this year said their companies had increased security budgets by 5% to 15% in the past year. AFCOM's findings are nearly identical to the results of a worldwide survey of 500 financial services firms that's being released this week by Deloitte Touche Tomhatsu. Deloitte said that despite tight IT budgets, most financial firms have maintained or increased their security spending and boosted IT security staffing levels.

The budget increases come at a time when a growing number of companies face the threat of external and internal cyberattacks, said Jill Eckhaus, AFCOM's president. "The most surprising thing in my mind was that almost 30% of the companies surveyed did have a breach of security last year," she said.

In the Deloitte survey, 40% of the respondents reported security breaches in the past year — with most of them coming from external sources.

Growing concerns about cyberattacks have made "the approval process for security spending somewhat easier," Josephites said. "It is very, very difficult to 'ROI' security, but my management understands that it is the cost of doing business these days."

"I'm not having any trouble getting money for security," said David Krauthamer, director of information systems at Advanced Fibre Communications Inc., a Petaluma, Calif.-based maker of telecommunications equipment. The use of virtual private networks and an increase in the number of workers connecting to the company's network from outside its offices has made remote access a major security concern, Krauthamer said.



Securing IM

Kevin Ott, vice president of technology at Terra Nova Trading LLC, a financial services firm in Chicago, said it's not just a question of staying on top of the growing number of hacker threats. Terra Nova also has to respond to customer demand for instant messaging support on its network. That means investing in technologies to secure and archive such communications — measures the company has already invested in for internal messaging use.

Despite the increased spending, only about 5% of the respondents to Deloitte's survey claim to be extremely confident about their ability to withstand attacks, according to Ted DeZabala, a partner in the firm's security services group. ◗

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BRIEFS

Chip Glitch Halts IBM Server Sales

After Intel Corp. disclosed that an electrical problem can cause some of its 64-bit Itanium 2 processors to shut down or behave unpredictably, IBM stopped shipments of the Itanium 2-based server it released in late April.

Hewlett-Packard Co. and Unisys Corp. plan to continue selling systems that use Itanium 2 processors. Intel said it will swap older chips for new ones upon user request.

CSC Expands IT Outsourcing Deal

Computer Sciences Corp. (CSC) said it has signed four contracts that expand a 12-year-old IT outsourcing deal with General Dynamics Corp. in Falls Church, Va. The new agreements are worth a total of $137 million, CSC said.

The El Segundo, Calif.-based company also reported a $162.7 million profit on revenue of $3.08 billion for its fourth quarter, which ended March 28.

IBM Buys Vendor of Provisioning Tools

IBM announced that it has acquired Toronto-based Think Dynamics, a developer of software that provides automated system-provisioning capabilities. The companies didn't disclose the financial terms of the deal, which is intended to augment IBM's on-demand computing strategy. IBM said Think Dynamics developers will be blended into its Tivoli management software unit.

Short Takes

Blue Bell, Pa.-based UNISYS said it plans to announce next month a set of business process modeling tools that will be marketed as part of a new IT services offering called Business Blueprints. . . . GARTNER INC. predicted that 30.7 million PCs will be shipped worldwide this quarter, up 6.4% from a year ago.

MARK HALL ■ ON THE MARK

IT Infrastructure 'Game' All but Over . . .

. . . for vendors seeking high growth, claims ex-Lotus exec Steve Layne, who's now CEO of Malvern, Pa.-based Entigo Corp. The new game, he says, is identifying areas long neglected by IT pros and then delivering a "targeted fix." For Entigo, the target is automating the handling of product warranties. According to generally accepted accounting principles — **you know, the ones so highly prized at the former Arthur Andersen** — companies must reserve funds on their balance sheet to cover warranty liabilities. So, having precise data on a company's financial exposure in this area is vital to a CFO. And managing warranties isn't cheap. Layne points out that 80% of warranty processing currently requires human intervention because the aging mainframe or minicomputer home-brewed programs that keep track of faulty-product claims lack the refined rules engines available now. His company will replace Version 3.5 of its software with Entigo Warranty 4.0 in late June, adding features for handling multiple warranties in a supply chain, plus more out-of-the-box reports and analytics on all manner of warranty statuses. Entigo also has a deal to output data to SAS Institute Inc.'s analytical tools. To improve its workflow automation, which Layne implies could **reverse the manual review of warranty claims** to a mere 20%, Entigo tossed aside its own rules engine in the 4.0 release and integrated one developed by Paris-based Ilog SA. The price tag for an Entigo implementation isn't cheap, reaching up to $1 million. So **read the software warranty carefully.** ■ "Clients have ceased believing the claims of vendors," says Mark Ruddock, CEO of Toronto-based software vendor Inea Corp. Whether or not you believe that statement **will depend on how much you trust vendors**, of course. Nevertheless, Ruddock says a vendor's credibility, such as it may be, remains vital — especially when the software selection process "in the last 12 months has become the most onerous I can remember." So, he noted, Inea "does not try and overhaul the future" for everyone. Instead, the company is focusing on the financial services arena with its Inea Performance Management Suite. The software is now in incarnation 2.4, but Version 3.0 is in beta-testing with a **goal to go gold** by summer's end. It measures corporate performance in areas such as budgeting, planning and forecasting, and produces reports for internal users as well as financial regulators. Ruddock says that among other new goodies in 3.0, you can expect to see improvements to the software's capital planning functions and new tools for compensation management. Believe him or not. ■ Today, **the Eclipse open-source development framework** is due to get a boost when Instantiations Inc. in Portland, Ore., ships its CodePro Express package for developers who work at companies with fewer than 1,000 employees. The new product complements the company's CodePro Studio for large organizations. The difference between the two is price — $199 for Express and $599 for its big brother — and the number of functions in their various features. For example, in Express you get 150 audit rules for checking the quality of your code, vs. 300 in Studio. You can expect more from Instantiations soon. The company has a seat on the Eclipse board and **is leading an open-source effort called Koi,** which is building developer collaboration tools into Eclipse. The company will add instant messaging and peer-to-peer tools to its products by the end of September. ■ Tired of fielding requests from **tech-impaired execs who can't keep track of their files?** Punch Networks Corp. thinks it may have a fix for you. Next week, the Seattle-based company plans to ship Punch WebDrive Sync Engine, client-level code that works with the company's online storage service. The software will synchronize the most recently modified files for up to 10 Windows devices on a single account. It encrypts the data for transmission and keeps all files up to date in the My Documents folder of the devices at a cost of $99 per year for 100MB, which should be adequate for most suits. Engineers and field-support staffers might prefer the $800-per-year 1GB plan. **Companies that want to talk at the terabyte level** can negotiate their own contracts. ◗

Weighing In

Visible Inventory Inc. in Salem, N.H., plans to ship this week SuppliLink 2.0, software that calculates inventory changes based on weight data. Sensors hooked to a wireless network capture the changes from warehouse parts bins, and the changes are then reported to a SQL Server database. An Oracle version is in the works. The upgrade was completely rewritten in Microsoft's .Net for easier integration with other applications.

MatrixOne Upgrades PLM Suite

BY JAIKUMAR VIJAYAN

MatrixOne Inc. this week plans to upgrade its product life-cycle management (PLM) software by adding two new applications and other features such as improved end-user collaboration capabilities.

PLM products like the new Matrix10 software from Westford, Mass.-based MatrixOne are attractive to manufacturers because they can help companies achieve significant product-development efficiencies, users said. But they added that deploying the tools can be complex and time-consuming.

Jeff Davey, manager of integrated engineering at Siemens Dematic AG, a maker of factory automation systems with its U.S. headquarters in Grand Rapids, Mich., said the company is using MatrixOne's applications to set up a centralized repository of project, configuration, design and other product-related data that can be simultaneously accessed by all of its design teams.

The cross-functional view provided by PLM can improve time to market, said Mark Brewer, vice president of IT at H.B. Fuller Co., a maker of specialty chemical products in St. Paul, Minn.

H.B. Fuller uses Electronic Data Systems Corp.'s Teamcenter PLM software to manage the design of its chemical formulations. The software is expected to help the company better control both raw and formulated materials, Brewer said. "It's been controlled chaos without it," he said, adding that the lack of well-defined processes has resulted in product overlaps.

But deploying PLM applications can be a big challenge for IT managers from both a technology and business process standpoint, according to Davey. "Whatever time you think it will take to deploy PLM, just triple it," he said. ◗

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BRIEFS

Automakers Plan Messaging System

Covisint LLC, a business-to-business exchange, said it's working with the Big Three automakers and three suppliers of automotive parts to develop an XML-based data messaging system. The system is due late this year and will be marketed as an alternative to electronic data interchange technology for the auto industry, according to Southfield, Mich.-based Covisint.

CA Narrows Loss, Has Higher Sales

Computer Associates International Inc. reported a $106 million loss on revenue of $801 million for its fourth quarter, which ended March 31. That compares with a year-earlier deficit of $238 million on $772 million in revenue. CA said software license fees under its subscription-based pricing model totaled about $392 million in the fourth quarter, up from $270 million a year ago.

Judge Calls for Microsoft Reports

The federal judge overseeing the Microsoft Corp. antitrust case ordered the U.S. Department of Justice and the states involved in the case to file reports every six months detailing what the software vendor is doing to comply with the terms of a settlement deal approved last fall. The first report is due to be filed to U.S. District Court Judge Colleen Kollar-Kotelly by July 3.

Short Takes

ORACLE CORP. this week plans to announce an upgrade of its sales management application with new templates for creating sales proposals. . . . GATEWAY INC. disclosed that the U.S. attorney for Southern California has opened a preliminary inquiry into alleged accounting improprieties at the Poway, Calif.-based PC maker.

W3C Readies New Tech Patent Policy

Aims to prevent vendors' patent claims from blocking Web standards work

BY CAROL SLIWA

THE World Wide Web Consortium (W3C) is poised to unveil a formal policy for dealing with technology patents that have the potential to block the development of interoperable Web standards.

Tim Berners-Lee, director of the Cambridge, Mass.-based W3C, said a decision on the patent policy is due to be announced "very shortly," now that the organization's management team has reviewed feedback collected during a public comment period that ended April 30. He declined to disclose details of the new policy.

A W3C working group has spent more than three years developing a precisely defined patent policy to replace the "minimalistic" and "very loose" provisions that currently require members who know of patent claims relevant to ongoing standards work to disclose them, said Daniel Weitzner, chairman of W3C's patent policy working group.

Bridging a Gap

Weitzner said the policy drafted by the working group reflects the "overwhelming goal" of producing standards that can be implemented royalty-free. But the group also included an exception provision that will make it possible for members to consider alternate licensing terms when it's deemed impossible to meet the royalty-free goal, he said.

That reflected a desire for flexibility as well as the group's attempt to acknowledge the concerns of those who favor a so-called reasonable and nondiscriminatory model that permits the collection of patent licensing fees, Weitzner said.

The need to establish a formal policy became apparent as some patent holders started to assert claims to technology being used as part of proposed Web standards. One notable case involved a claim from Seattle-based Intermind Corp., now known as OneName Corp., that the W3C's Platform for Privacy Preferences might infringe on a patent it held.

More recently, the W3C's patent policy became a hot topic of discussion among some W3C members who have speculated why IBM, Microsoft Corp. and other vendors have been submitting some key Web services standards proposals to the Organization for the Advancement of Structured Information Standards (OASIS) instead of the W3C.

IBM and Microsoft insisted that their decision to propose a Business Process Execution Language (BPEL) specification within Billerica, Mass.-based OASIS had nothing to do with patent issues — a claim they backed up when they submitted BPEL to OASIS under royalty-free terms [QuickLink 38188]. The companies said they chose OASIS because they felt it was the more appropriate standards body for high-level business specifications.

Karla Norsworthy, director of dynamic e-business technologies at IBM, said IBM's intention in the core Web services space is to submit only proposals for which it would provide a royalty-free license, since there's a need for broad adoption of Web services standards.

But Norsworthy said she can see a need for the exception provision in the patent policy proposed by the W3C to allow a working group to decide to publish a specification, even if a patent claim is raised. "I think the W3C is being practical in allowing a specification to go forward and working out the [intellectual property] from some third party as they go," she said.

Don Deutsch, vice president of standards strategy at Oracle Corp., said the provision was a last-minute compromise designed to address the concerns of IBM and Microsoft. Deutsch added that he expects it to be approved.

Weitzner said the exception provision "was an effort to address the concerns of a number of members." He added that the proposed exception procedure was designed to be hard to use "because the working group didn't want it to be used often." ◗

Berners-Lee: Standards Groups Are 'Very Different Places'

Q&A

Tim Berners-Lee, director of the W3C, spoke with *Computerworld* this month about recent moves by technology vendors to submit Web services standards proposals to OASIS instead of his organization.

What are your thoughts about that trend? OASIS and the W3C are very different places altogether. The rules are very different. [At the W3C,] a lot of that has to do with getting everybody on board, making sure everything is coordinated and trying to get the standard very widely deployed. [We require] a demonstration of implementation, of interoperability, before something can become a standard. We have public review. We have requirements that the groups be chartered to liaise with groups which have related technology.

What OASIS provides is somewhere you can start an activity with no prior requirements. Three companies can just get together, they can start a group, and there's nothing to prevent the same thing [from] being done in different organizations. There's nearly no management control at all. It's faster.

Do you think it's a dangerous trend? For core standards for a big new market area, I think it's very important that they are widely accepted by everybody. . . . For an application-level specification or for something like a programming language, you can have three, four, five, eight of those around and mix them together to a certain extent. So in some areas, it doesn't hurt. But for the foundational specs of the Web services architecture, I feel that it's important to have the W3C.

Do you have concerns about what's happening with the BPEL specification within OASIS and the W3C's similar standards efforts on choreographing Web services? I do have concerns about that. I feel that's an area where it's not obvious how things are going to work out for the best, because there's no mechanism for W3C and OASIS to coordinate.

Some vendors say that the W3C is concentrating too much on the Semantic Web initiative and not enough on Web services. Do you think that's a misguided impression? Obviously, there are some members for whom Web services are absolutely the thing. We try to keep it balanced. There are other people who tell us, "Why are you wasting your time on all this Web services garbage? If [companies] would just use the Semantic Web, it would all happen so easily."

– *Carol Sliwa*

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Continued from page 1

Ameritrade

City, N.J.-based Datek Online Holdings Corp. There weren't many. So Hirji said it came down to choosing the best of each company's staff and technology — and getting rid of the rest.

INTEGRATION

The biggest technology challenge to date, he said, was consolidating three data centers into two, and two back-end systems into one.

Previously, Datek used Windows NT servers that ran homegrown middleware plus Linux servers from IBM, whereas Ameritrade used Sun Microsystems Inc. Unix servers and BEA Systems Inc.'s Tuxedo middleware [QuickLink 34203]. Ameritrade wouldn't say how many servers, disk arrays and network devices were culled as part of the consolidation effort, nor would it specify which systems are still in use.

But Hirji said the project included detaching the front end of Datek's trading system and then connecting it to Ameritrade's back-end system. "We did that over a weekend in March, and we did that without impairing any existing accounts, any of the balances, any of the trades," he said.

Now, both the Ameritrade and Datek online trading sites run on Ameritrade's back-end technology. The only thing left to do is merge the two front ends into a single Web site. That's expected to be done by September, Hirji said.

Ameritrade has shut down its data center in Omaha and combined operations into two others: its main IT facility in Kansas City, Mo., and Datek's data center in Secaucus, N.J.

On Track

Paul Cantwell, a financial services consultant at Accenture Ltd., said the Ameritrade/Datek integration effort is above average because it's ahead of schedule. Most merger-related integration projects drift on without end because of loose management and unrealistic expectations, he said.

Hirji said it was a challenge dealing with two rival IT teams, each of which thought its homegrown software was better than the other's. He added that he overcame the internal battles by quickly establishing a clear, objective methodology for choosing technology. "We made sure that the broad organization had input and buy-in into that process," he said.

Hirji said his job now is to build a single company that's more efficient and profitable than the two former companies were — in the midst of a dreadful economy. Fortunately, he said, Ameritrade's focus on online trading gives it a lower IT cost structure than brokerages that diversify into businesses like banking, mortgages and insurance.

"So if it sucks for everyone else right now, it sucks less for us," Hirji said. "The converse is also true. When it gets better for everyone else, it gets even better for us, given our cost margin." ◗

CIO Gives Notice of Layoffs

When Ameritrade brought him in as a consultant last September to consolidate its IT systems and staff after the Datek acquisition, Asiff Hirji decided it would be better to take his time and carefully choose the best talent, instead of, as he put it, "firing 90% and you're done."

ASIFF HIRJI says notifying workers was the honorable thing to do.

"Some CIOs will tell you technology is a competitive advantage," said Hirji, who now is CIO. "I don't believe in that at all. I think technology by and large is a commodity. The only differentiating factor, the only thing you can build sustainable competitive advantage around, is people."

Every working moment that he's not actively involved in a project, Hirji is thinking about how to attract, retain and develop the best IT talent, he said.

But Hirji is making deep cuts because of the merger. Most of the 250 workers being let go were laid off late last year, but a significant number will stay until September. They also were told in December that they would be cut, which Hirji said was the "honorable thing" to do.

Hirji acknowledged that providing advance notice of the planned layoffs increases the chance that disgruntled employees could take revenge. But he said some laid-off workers will strike back at the company no matter what, and the rest are more likely not to retaliate if he's open about the layoffs and treats them fairly.

Just in case, though, Hirji has put additional safeguards in place, such as monitoring tools and restricted access to systems, for the employees who are being let go in September.

– Lucas Mearian

Fizzer Worm Sparks Concern About Remote Security Risks

Damage to corporate networks is minor, but remote users aren't fully protected

BY JAIKUMAR VIJAYAN

Last week's Fizzer worm appears to have had little impact on corporate networks, according to IT managers and analysts. But the malicious code and spyware that such viruses leave behind on unprotected systems could prove to be a long-term headache for companies, they said.

> **"I think the biggest security threat today is remote users."**
>
> **DAVID KRAUTHAMER,** DIRECTOR OF IS, ADVANCED FIBRE COMMUNICATIONS INC.

Fizzer represents an emerging class of worms that try to circumvent increasingly sophisticated corporate defenses in a variety of ways. The worm was contained in executable attachments embedded in e-mail messages with innocuous-sounding subject headers.

In general, companies that keep their antivirus software up to date and have policies for filtering executable attachments would have been protected against Fizzer, said Russ Cooper, an analyst at TruSecure Corp. in Reston, Va.

Pete Lindstrom, an analyst at Spire Security LLC in Malvern, Pa., said IT and security managers who haven't yet taken such basic defense measures are simply being "derelict in their duty."

But workers who dial into corporate networks from their homes and other remote locations may not have full-blown defenses available to them and are therefore more vulnerable to having their PCs infected by such viruses, said Michael Allgeier, data security officer at the Lower Colorado River Authority in Austin, Texas.

That could prove dangerous because of the payload carried by worms like Fizzer. According to F-Secure Corp., a Helsinki, Finland-based antivirus software vendor, Fizzer contains a built-in Internet Relay Chat back door, a denial-of-service attack tool, a keystroke-logging Trojan, an HTTP server and other components.

Facts About Fizzer

- The worm spreads via e-mail and the Kazaa P2P file-sharing network.
- It contains a back door, a denial-of-service tool and a keystroke-logging Trojan.
- It generates e-mail subject headers that are completely random.

Such capabilities could allow hackers to remotely control compromised machines and steal data from them or mine them for passwords, analysts said. And connecting a compromised system to a corporate network might let hackers burrow past other defenses.

"I think the biggest security threat today is remote users," said David Krauthamer, director of information systems at Advanced Fibre Communications Inc. in Petaluma, Calif. "It's becoming easier to gain an access foothold to a corporate network."

"We don't have any control over remote workstations or home PCs or kiosks or wherever it is that people access our networks from," Allgeier said. "We can't really rely on personal firewalls and antivirus software to detect Trojans and keystroke-loggers."

The Lower Colorado River Authority has begun to roll out software developed by Austin-based WholeSecurity Inc. that scans individual desktop PCs for malicious code. Allgeier said it's looking to deploy the tool for remote users as well. ◗

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Vendors Need to Find New Ways To Work With Users, Zander Says

Former Sun exec remains 'bullish' about IT industry

BY MARYFRAN JOHNSON

Ed Zander, *former president and chief operating officer at Sun Microsystems Inc., last week said he will become a managing director at Silver Lake Partners, a Menlo Park, Calif.-based investment firm. Earlier this month, Zander spoke with* Computerworld *about the IT industry and his time at Sun, which he left last July.*

How can technology vendors dig themselves out of the mess they're in now? We as an industry have to demonstrate to IT professionals and CIOs what we're going to do for them to reduce their IT costs. There's a significant backlog of applications, but budgets are frozen or reduced, and people are stuck with an IT infrastructure that's way too expensive.

When you get back to the business side of the house, they're all tired of hearing about all this technology. The company that gives them an IT advantage to design cars more quickly or reduce supply chain costs, that's what matters. They're not interested in hearing about 48-way servers.

What was really behind your decision to leave Sun? With the No. 2 position, you do those jobs for three or four years, and then you either get the CEO job — like Sanjay Kumar at CA — or you exit. Sometimes on good terms, sometimes not. With me, it was friendly. Scott [McNealy] wants to run the company for another 10 years. But if you do the president's job, eventually you want to make the CEO decisions. You're so close to that office, and you're running the company from day to day, but the CEO still gets to make the big strategy calls.

What do you think were the best decisions you made at Sun? One of my best was branding Solaris, which was very controversial inside Sun at the time. That was a first in the mainstream computer market, taking an OS and making it a brand. It basically made Solaris what it is today. Another great decision was around the whole Internet and dot-com era, seizing that opportunity and driving the company around it. We were the "dot" in "dot-com," and any new start-up was using Sun.

What were your worst decisions? In 1992, we introduced a version of Solaris that was not ready for prime time. I rushed it to market too soon, and that was a disaster. More recently, I think we didn't push enough on the whole Linux question. We should have done more to understand how to embrace it within [Sun's] strategy, to "own" that whole developer community. The third thing was not moving to [downsize] the company properly once the market started coming apart in the fall of 2000.

What do you think the next big thing in IT will be? There's no big "next thing" on the horizon. There's nothing like the Net or PCs coming in the near future. It's going to be more about rationalization, consolidation and making sense of what people already have. But my long-term outlook is still very bullish. People say the industry is maturing, but I tend to argue that it's not, because innovation is still happening. ▶

Continued from page 1

i2 Concerns

mission is investigating its accounting practices.

Blake Kresl, manager of technology at Southwest Airlines Co. in Dallas, said business executives at the airline have taken note of the unanswered questions about i2's finances. Because i2 and Southwest are based in the same city, the vendor is "constantly in the morning news," he said. "So whenever a story hits, we're asked about what's going on. Obviously, being so public, it's a concern."

But, Kresl added, he remains confident that, "in one form or another, the applications we want will keep going."

"Certainly, there is a concern about the delisting and the financial problems," said George McAfee, supply chain project manager at Cooper Tire & Rubber Co., a Findlay, Ohio-based manufacturer that runs i2's production scheduling and transportation management software. "We've put a lot of money on the line and have high expectations from [our senior] executives."

But McAfee said i2's problems won't stop him from buying more of the company's software. And like other users at the conference, he said he has seen a positive change in the way i2 operates since it overhauled its senior management in April 2002.

Before the reorganization, McAfee said, i2's leadership was "more focused on growing the business at all costs and trying to sell the software to everyone in the world, instead of nurturing the existing client base. I think the mission was very shallow, and that's why it failed."

Kresl also said i2's attitude toward users has improved. "There was a little bit of hubris [before]," he said, adding that i2 is easier to work with now and is more willing to acknowledge and address shortcomings or bugs in its applications.

"They're not looking at selling back into the company, but at making a success out of what they've already sold us," Kresl said. Southwest uses i2's parts management and demand-planning software.

"The last year has been a challenge for i2," said Janet Eden-Harris, i2's chief marketing officer, during a speech. "But it's a stronger company than it has been for the last several years," she added, referring to the management changes as well as downsizing moves, new product rollouts and improving customer-satisfaction rates on i2's surveys.

Even so, the combination of the SEC investigation, the reaudit and the stock delisting continues to weigh on i2. Some users said the reaudit process, which is due to be completed next month and is expected to lead to a restatement of i2's financial results for several years, will be a key milestone for the vendor.

"We watch our critical trusted suppliers very carefully, and at present, this is not satisfactory for anyone," said Jeff Poole, senior vice president of procurement strategy at Airbus SAS, a Toulouse, France-based aircraft maker. "We'll wait and see what happens when the [reaudit] report is issued — not that anyone is particularly expecting any difficulties around that."

J.B. Hoyt, supply chain project director at Whirlpool Corp. in Benton Harbor, Mich., said via e-mail that i2's management has said the reaudit should have a "benign" affect on the vendor. If the conclusion of the process "is negative, then we will all have to assess the outcome at that time," said Hoyt, who didn't attend last week's conference. ▶

i2 Takes Steps to Improve Customer Loyalty

At last week's conference, i2 executives outlined a series of initiatives designed to further boost customer satisfaction.

Sam Nakane, who has been overseeing i2's reorganization efforts since being named chief operating officer 13 months ago, told conference attendees that the company is setting up a new customer organization designed to streamline communications with key users by providing them with a single point of contact.

He said account managers will be assigned to work with specific users and coordinate resources at i2 on their behalf as needed.

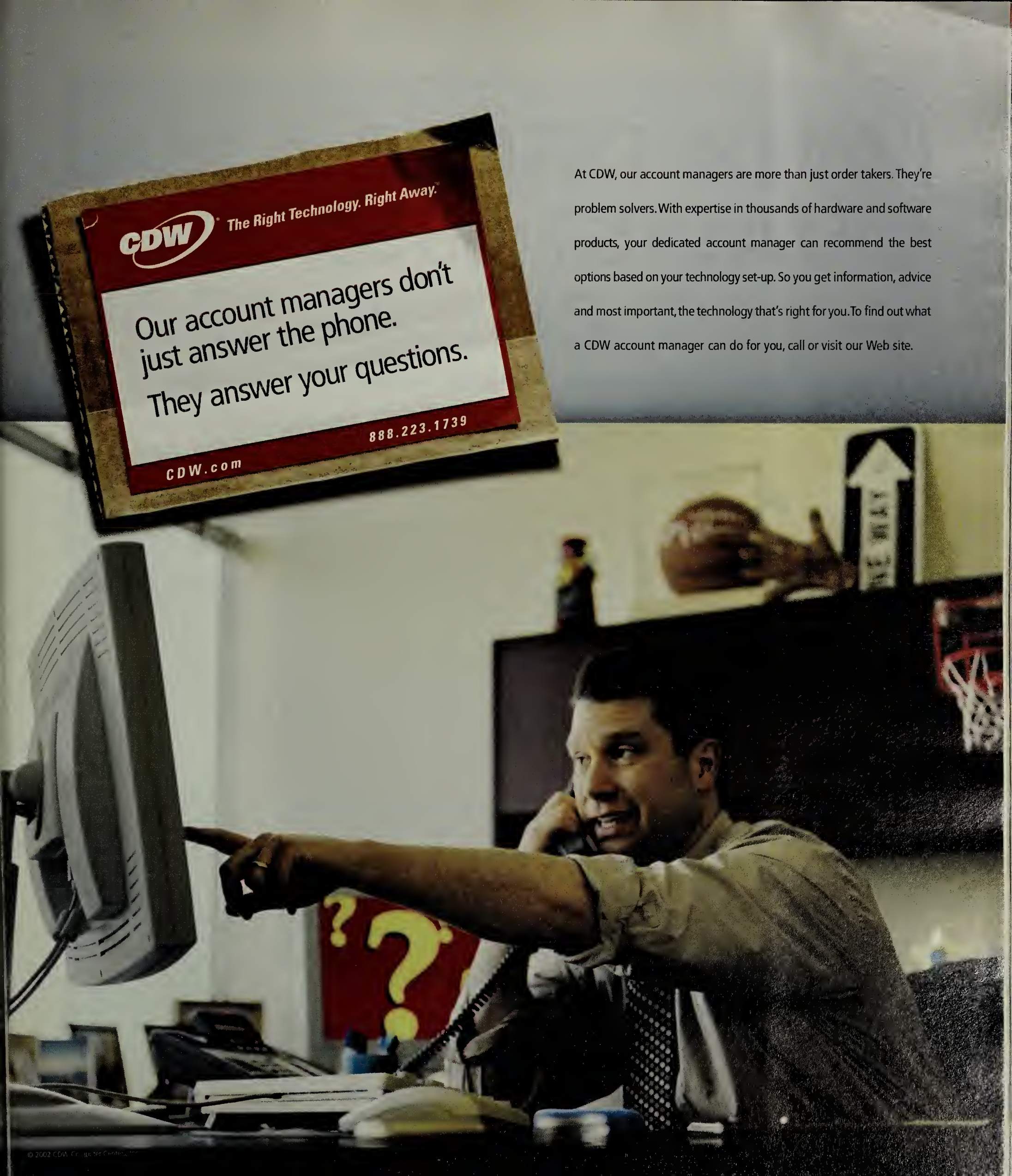
In addition, i2's field-service workers will chart software successes and performance gaps at the companies they perform work for and will then assess potential improvements and create 90-day action plans.

Nakane said i2 is also launching a business optimization service under which its consultants will work with users to improve their business processes after applications have gone live. Another planned step is the addition of more flexible pricing options that will let companies pay for software licenses upfront, after they start using i2's applications or when an agreed-upon amount of work is completed.

Jeff Poole, senior vice president of procurement strategy at Airbus, said the aircraft maker is already benefiting from the flexible pricing and other changes at i2.

"We've been working with i2 over the past two years and pushing them pretty hard to do things," he said. "It's worked well on both sides."

– *Marc L. Songini*



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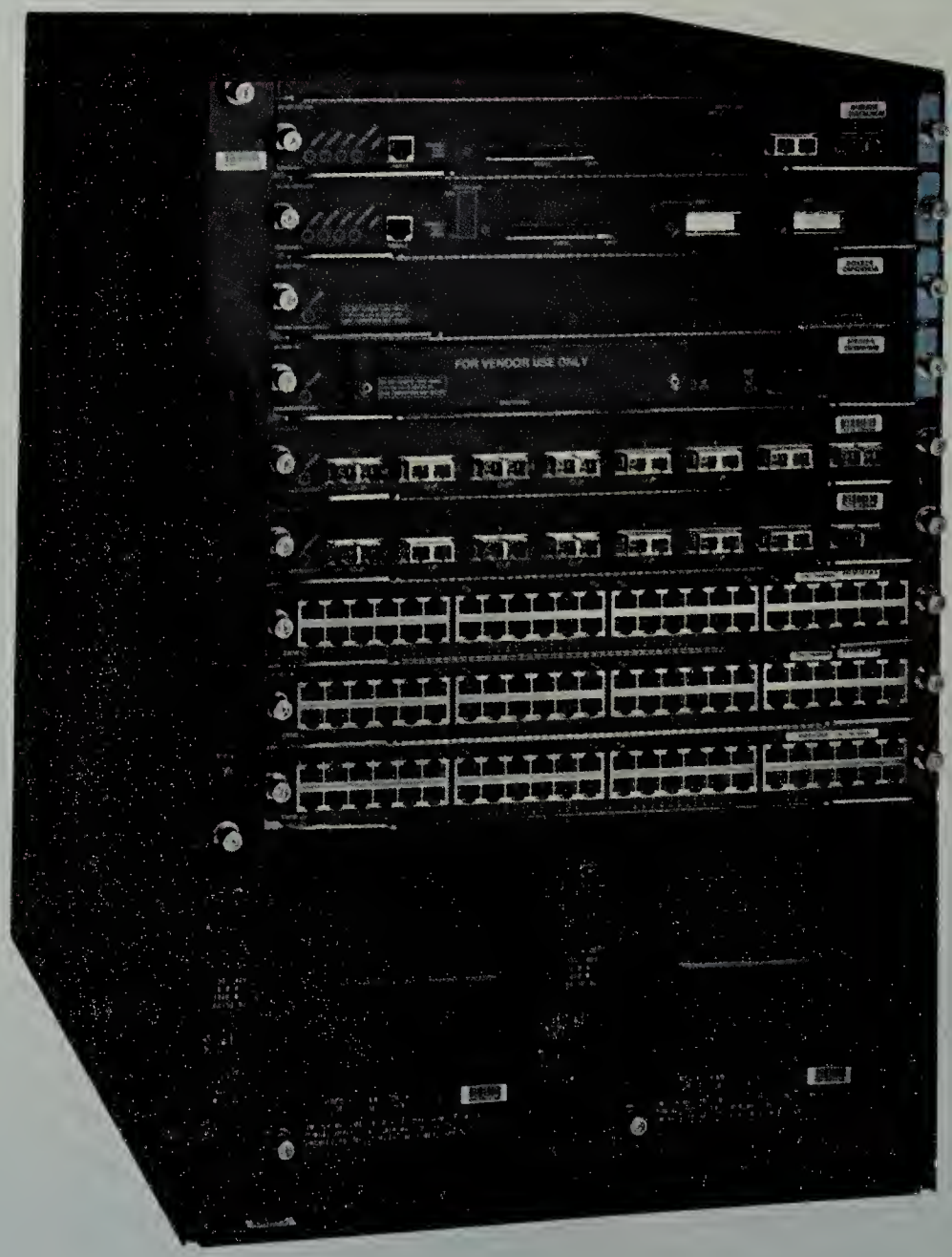

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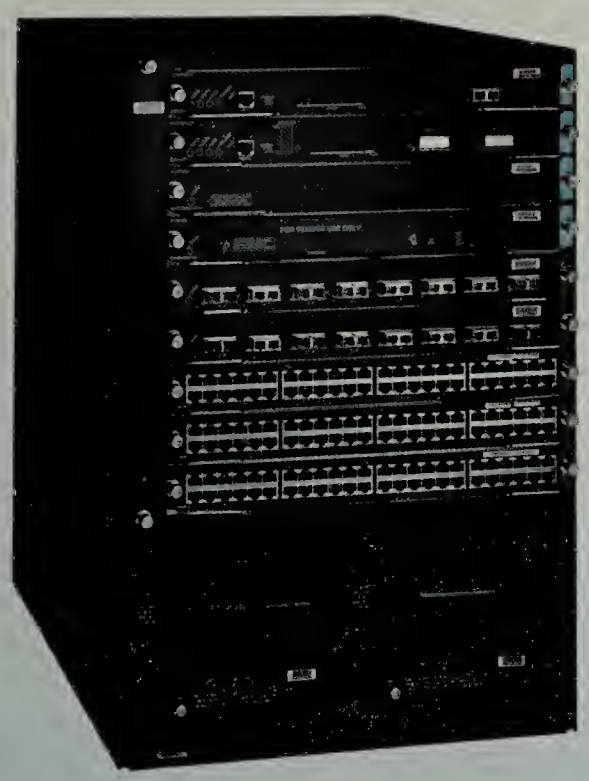

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Ariba Upgrades Corporate Spending Apps

BY MATT HAMBLEN

Ariba Inc. last week unveiled upgrades to eight of its spending management applications, with a focus on helping companies better monitor expenses for corporate services ranging from snow removal to legal help, marketing and IT consulting.

The new releases were announced at Ariba's user conference in Hollywood, Fla., and are all due to be available next month.

Martin Boyd, director of marketing at Ariba, said the Sunnyvale, Calif.-based company is adding functionality designed to support services that typically account for one-third to one-half of all expenditures within companies.

The upgraded software can manage spending in a total of 16 categories, including travel, utilities, insurance and health benefits, Boyd said. It can also be used to track staffing costs, such as expenses for temporary workers and the use of recruiters, he added.

Earlier this month, consumer electronics retailer Best Buy Co. announced that it's expanding a deployment of Ariba's products and said it wants to use the software to automate more of the process of managing contract-driven corporate services.

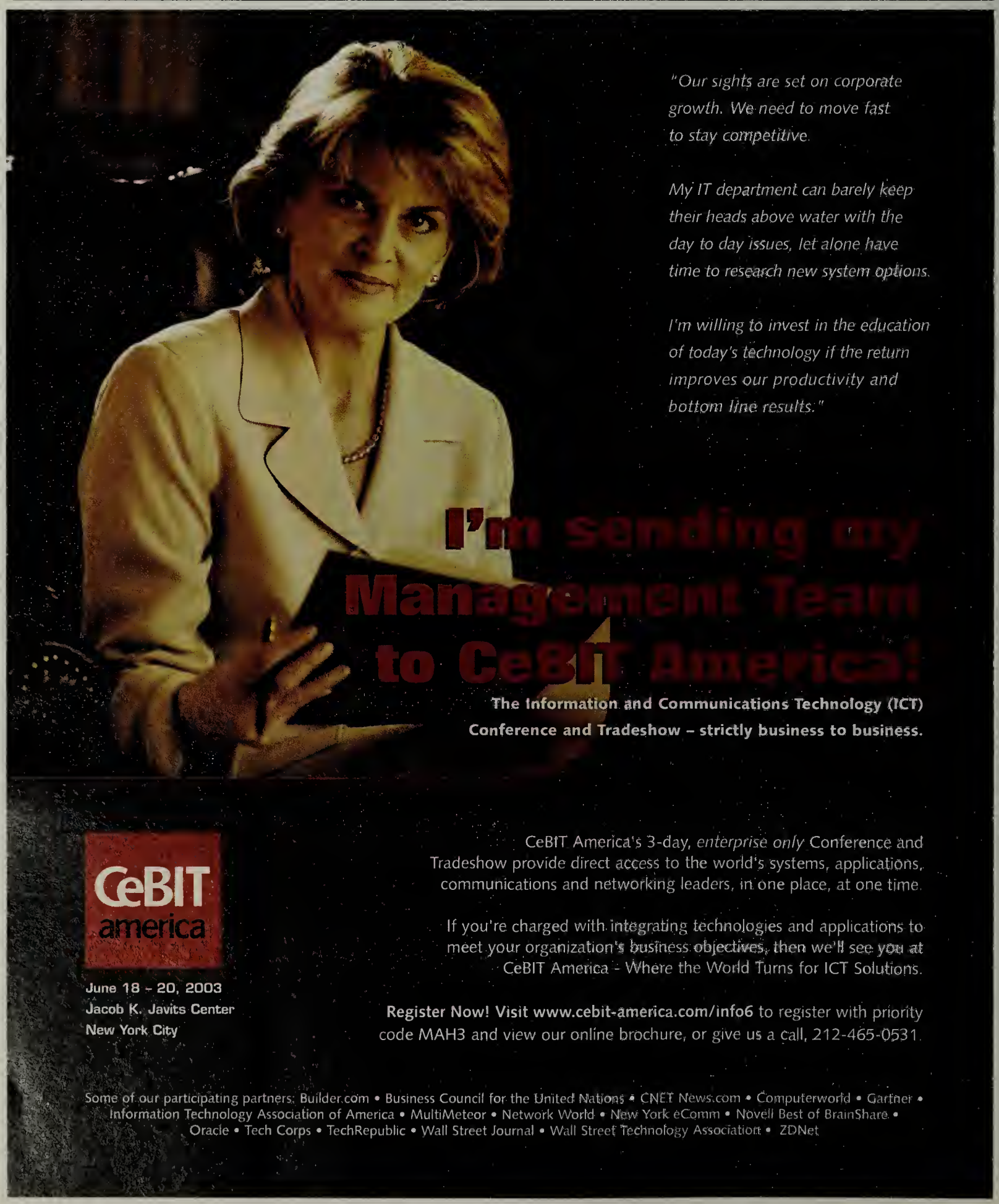
A Best Buy spokeswoman said the Eden Prairie, Minn.-based retailer has been an Ariba customer since late 2000. About 80,000 Best Buy employees use the vendor's purchasing and travel expense management tools. As part of the expansion plan, Best Buy is adding Ariba's contracting and invoicing applications.

The retailer has already gained efficiencies in procuring some services, like snow removal, the spokeswoman said. Contractors can send electronic invoices to Best Buy, allowing for automatic reconciliation and settlement of payments, she added.

Ariba's rollout includes upgrades of its purchasing, contracting and invoicing applications, plus revised versions of its sourcing and spending analysis products.

"The 'wow factor' is that Ariba is putting more functionality around services," said Christa Degnan, an analyst at Aberdeen Group Inc. in Boston. "If a company has done any e-procurement, this is the next level."

The services components are "relatively unique" to Ariba, Degnan said, citing PeopleSoft Inc. in Pleasanton, Calif., as its closest competitor. Smaller companies that specialize in spending management software include Elance Inc. in Sunnyvale, Calif., Fieldglass Inc. in Chicago, and IQNavigator Inc. in Denver.



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9:00am to 9:45am	**Industry Update** **Evaluating Your IT Sourcing Options** Bart Perkins, Managing Partner, Leverage Partners
9:45am to 10:15am	**Business Case Study** James Beattie, EVP and CTO, CCC Information Services
10:15am to 10:30am	Refreshment Break
10:30am to 11:30am	**Outsourcing Strategies** **Leadership Strategies in Offshore Outsourcing** Moderator: Maryfran Johnson, Editor in Chief, Computerworld Panelists: ■ Jerry McElhatton, Senior EVP of Global Technology and Operations, MasterCard International ■ Joe Drouin, VP and CIO, TRW Automotive ■ Tasos Tsolakis, VP of Global Technology Operations, Global Exchange Services ■ James Beattie, EVP and CTO, CCC Information Services
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MARYFRAN JOHNSON

Credibility Challenged

THERE WAS A TIME in the late 1990s when the common workplace refrain was, "Are we having fun yet?" I don't quite remember the dot-com context (there's so much of that period I've blotted out), but the gist of it was about wondering when all the insanely long hours and maniacal workaholism were going to pay off. For the most part, they never did.

Today the question (no longer even remotely amusing) would probably be: "Are we credible yet?" On a personal level, most IT executives and managers would probably answer in the affirmative. When we surveyed 144 senior IT managers at *Computerworld*'s Premier 100 IT Leaders Conference a few months ago, only 20% of them said they thought IT had image problems "in my company." But 45% identified a lack of credibility for IT "in general."

MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at marytran_johnson@computerworld.com.

Those image problems stem from well-known complaints about IT departments being too slow, too expensive and too geeky to communicate the business value of what they're doing. So, on a professionwide basis, IT is lugging around a lot of baggage, as our Cover Story last week pointed out in detail ["Tarnished Image," QuickLink 38043]. There's a lingering resentment at many companies about technology dollars gone down the drain. The evidence includes chronic IT budget overruns, fizzled projects, overpriced Y2k fixes, deflated dot-com dreams (remember B2B exchanges?) and the billions spent on complex enterprise software installations that didn't quite live up to their billing — and probably never will. All of which puts your IT operation at greater risk of an unwelcome visit from the outsourcers.

Unfortunately, things have gotten worse in the past few years. The Hackett Group can prove it with performance benchmarks from some 2,000 of the nation's top companies. At average-performing companies, the IT project completion rate was 67% last year — down from 72% in 1999. Even worse, completion of short-term projects (those that are supposed to take less than a year) slipped from 58% in '99 to 51% last year.

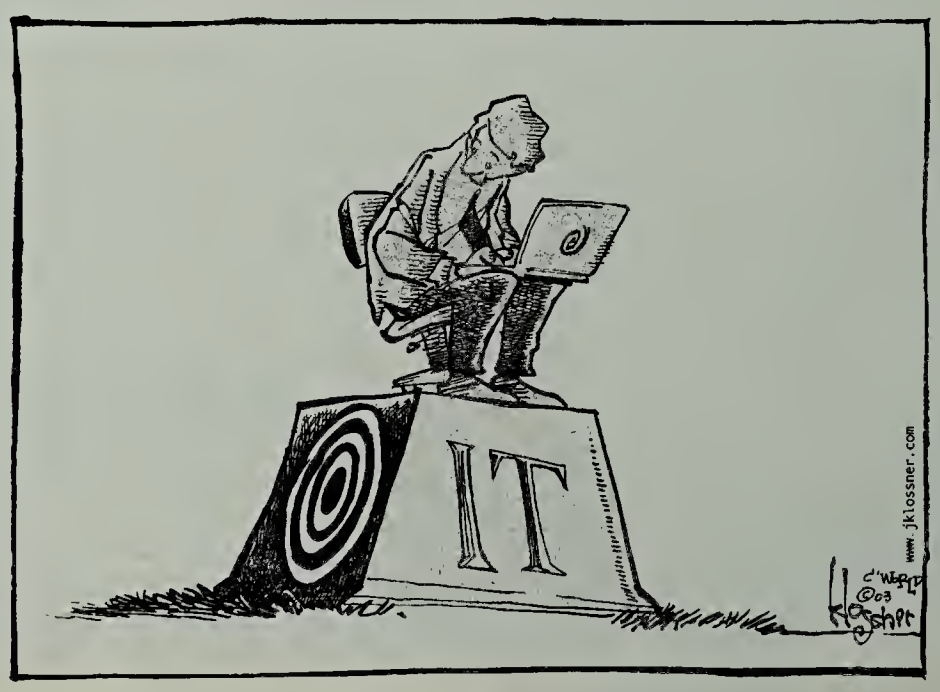
What hurts about statistics like these is the way they paint the whole profession with the same sticky brush. That's unfair to companies like Hilton Hotels, where Corporate Systems Vice President Damien Bean can prove how IT is run like a business with a bottom-line focus. "The entire IT budget — every last cent — is funded out of the business side, and we charge back. We absolutely hit our budgets," he says, adding that "I don't think IT executives are suffering a credibility gap more than any other senior function."

Maybe so. But since the budget money for those future IT projects remains firmly in the hands of the CFOs and CEOs, any argument over who's lost more credibility is likely to end in a Pyrrhic victory.

There are winning strategies in this image makeover challenge, however.

At the companies where IT has turned its reputation back into gold, the three best practices have been to involve the business units more in planning and decision-making, prioritize projects more effectively and boost communication with the CEO and other senior executives. Sounds rather common-sensical and familiar, doesn't it? At other places, IT groups are creating marketing programs to call attention to their services. They're surveying internal and external customers for feedback and suggestions. And they're keeping it real with users by managing expectations and being honest about project delays.

So, are you credible yet? ◗



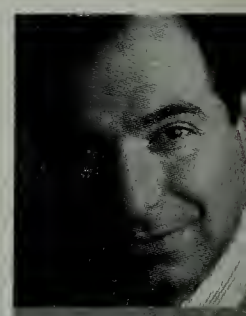
PIMM FOX

The Art Of ERP Done Right

TRYING TO JUSTIFY spending 1% to 3% of your company's annual revenue on ERP software is always going to be more art than science. This is mainly because the reasons for moving ahead with an ERP project have included the essential but difficult-to-quantify replacement of legacy systems along with the equally slippery goal of improving productivity and system reliability.

But when the CFO tells you to gauge the effect of ERP, you've got to come up with coherent metrics that are less artful and more concrete.

A new study by Meta Group might help. Meta says each company must include in its metrics its unique business, geographic and environmental context. As such, corporate location and revenue, the size of the user population and the actual ERP process must become part of your cost analysis. The report concluded that "total-cost-of-ownership metrics can be misleading when they are based on industrywide averages."



PIMM FOX is a freelance writer in Santa Barbara, Calif. Contact him at pimmfox@pacbell.net.

After surveying the work of six leading ERP vendors — J.D. Edwards, Lawson, Oracle, PeopleSoft, QAD and SAP — for 200 user companies in 12 industries, the results showed that ERP investments were made over three to five years. On average, 25% of the cost was spent on software, 40% on professional services and 25% on internal staff. Implementation time for these projects was approximately 20 months. Another seven months were needed before the benefits showed up. Calculating your TCO shouldn't stop when the project goes live. Also, include the first two years of operation.

Of course, part of your analysis needs to incorporate the structural changes you made to accommodate the ERP project. Indeed, the Meta report found that although smaller companies spend more as a percentage of

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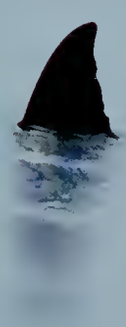

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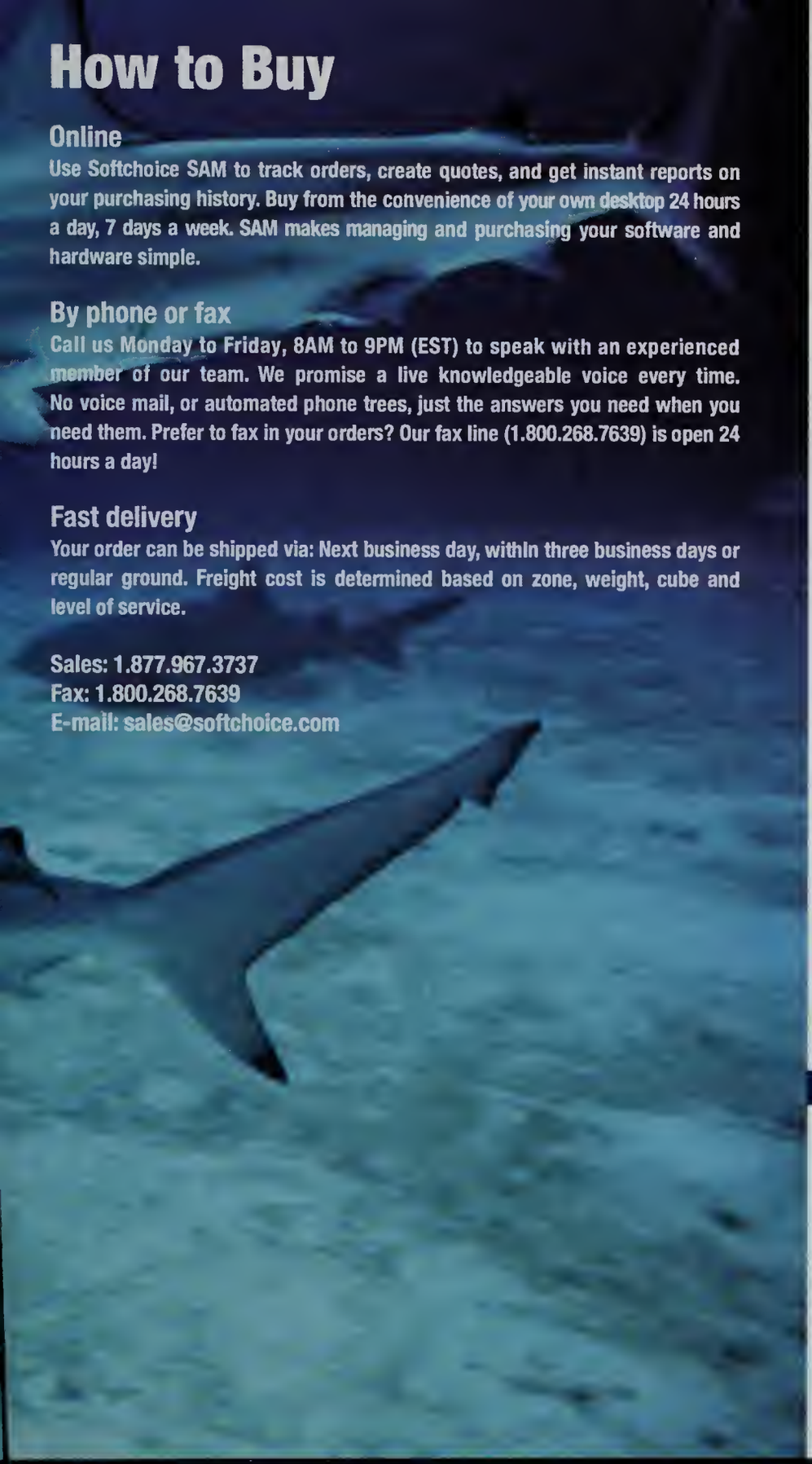

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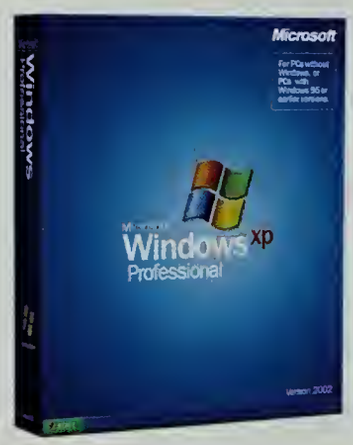

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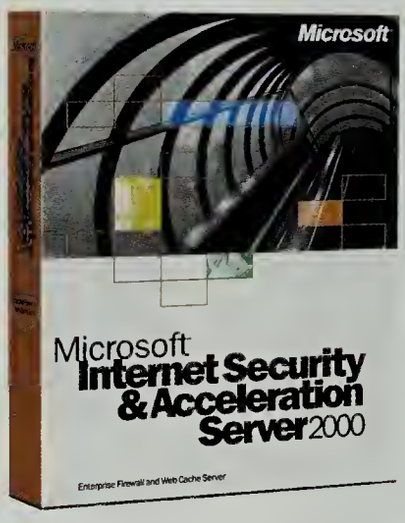

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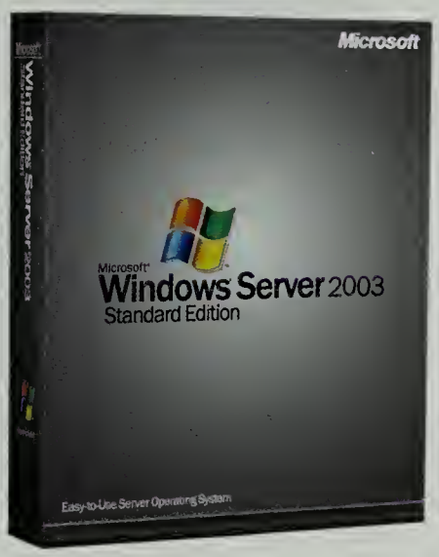

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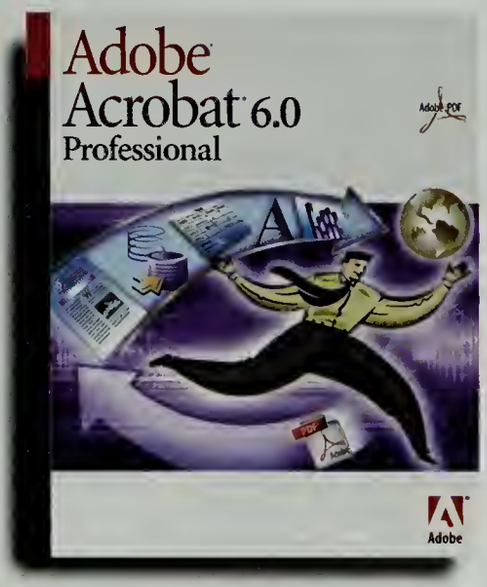

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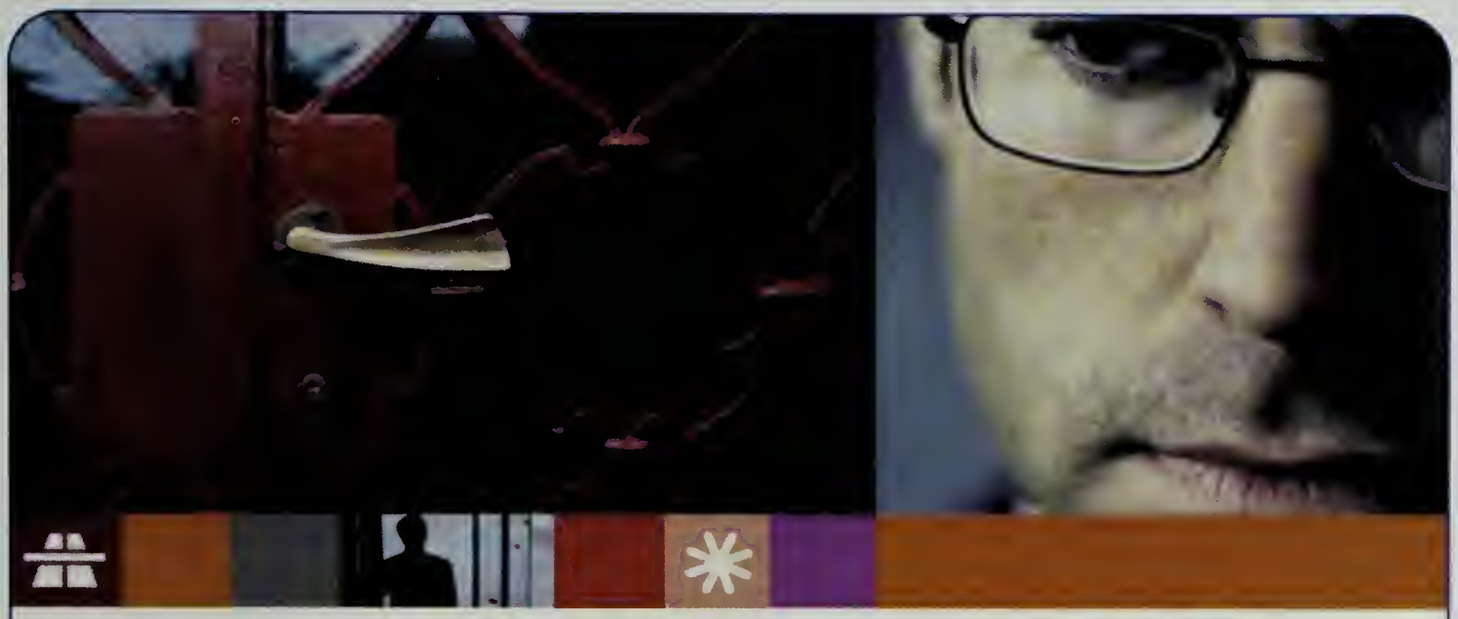

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revenue on ERP, the projects were more comprehensive.

Evaluating the benefits of ERP projects produced a top 10 list of intended accomplishments, according to Meta: replace outdated software, improve financials, improve analytics and decision-making, standardize cross-platform processes, improve IT performance, improve customer service, get a single-system view, improve purchasing, improve order management and reduce personnel costs. Your ERP wish list may be somewhat different, but it should be substantiated by metrics as well as testimonials from end users.

Finally, the report revealed that ERP vendor marketing efforts appear to all be for naught. Companies aren't particularly enamored of e-commerce or supply chain wizardry. Rather, IT managers said they regard long-term partner relationships as the true selection criterion, not features and functions.

And relationships are definitely an art, not a science.

DAN GILLMOR

Spam Control Is Failing

A FEW YEARS AGO, I wrote that in the unfortunate event of a global holocaust, the only survivors would be spammers and cockroaches. On reflection, I realized how unfair I'd been. I apologize to the cockroaches.

We are getting perilously close to a tipping point. As Federal Trade Commission Chairman Timothy Muris said April 30 as he welcomed experts in marketing, technology and law to a conference in Washington, unsolicited bulk commercial e-mail is threatening to wipe out the value of a communications system on which we all now rely.

The conference resolved little, except to amplify the need for some kind of fix. Rather, we need a variety of technological, social and legal fixes.

It's obvious why we still lack a legal fix. The direct marketing industry and its allies in technology don't want any serious federal laws against spam, so we don't have any. AOL Time Warner, Microsoft and several other big companies want a law that lets companies spam a recipient once. Marketers would be obliged to honor "opt-out" requests from e-mail recipients. Lousy idea. Opt-out solutions put the onus on the end user, where it doesn't belong. And given the number of businesses in the U.S. alone, we could all spend the rest of our lives opting out of unwanted e-mail.

DAN GILLMOR is technology columnist at the *San Jose Mercury News*. Contact him at **dgillmor@sjmercury.com**.

Nobody believes that spammers, especially those from overseas, would suddenly behave under a tough federal law. But a few prosecutions and jailings would certainly have some deterrent effect. Maybe that will happen in Virginia, the first state to enact a law making some kinds of spamming a felony, with potentially severe penalties for violators.

Some technical measures can help, but only at the margins. The challenge-response systems jettison mail from people who don't respond to a simple question that a computer can't answer, but they ignore the truly serious problem — the fact that spammers misuse resources they don't own, even when the mail doesn't get delivered.

My personal solution works pretty well, though it steals several minutes from my day and doesn't solve the stolen-resources issue. I get so much spam at my public e-mail address that I've taken to selecting the (relatively) small portion of mail I want to read and deleting the rest of the new mail in my in-box. On a less public account, I use a filter and occasionally check the automatically trashed items to ensure that I'm not deleting something I want.

A notably bad idea is using the "black hole" lists that network vigilantes have created. Subscribers to these lists refuse to accept and deliver mail from domains deemed friendly to spammers. This method, of course, sweeps up the innocent along with the guilty, which is an injustice.

One of the more intriguing proposals comes from Stanford University's Lawrence Lessig. He'd like a bounty system that rewards individuals who turn in spammers. I'm not convinced his specific idea would work, but he's clearly onto something important: giving incentives and tools to people at the edges of networks to take action on their own.

IT should lobby for something along these lines. Imagine: A law that gave companies a way to sue spammers could turn e-mail into a profit center. The more successful it became, of course, the quicker the spam plague would recede. It's worth a try, anyway. Not much else is working.

WANT OUR OPINION?

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www.computerworld.com/columns

READERS' LETTERS

Novell Abdicated

I COULDN'T AGREE MORE with the users who would like to see Novell market NetWare more successfully ["NetWare Stalwarts Remain Loyal Despite Dwindling Market Share," QuickLink 37719]. NetWare is vastly superior to any Windows product for most users, but the right people didn't get the message. Some technologically challenged "suit" in the boardroom is making the decision to switch from NetWare to Windows because he saw a commercial on TV. But this is happening not because Microsoft won the war, but because Novell abdicated.

Rod Anderson
Brick, N.J.

Who's in Denial?

IS IT THE USERS of NetWare who are in denial, or those who have implemented Windows NT for the same services? I think the latter users are in denial about the fact that NT isn't as stable, secure or easy to administer as NetWare.

The IT professionals who are keeping NetWare do so not because their continued use of NetWare is advantageous to their careers, but because getting things done and keeping systems up are advantageous to their careers. Three years ago, I was told that I was taking a risk by installing NetWare and eDirectory instead of moving to Windows 2000 and Active Directory from Windows NT 4.0. Now we have a stable environment, supported by fewer staffers than would have been required for the alternative, and we support workstations and servers at remote sites around the globe without a hitch. We can administer the network and directory quickly and efficiently and distribute applications at a moment's notice to anyone on the network.

Jeff Dill
Senior manager of technical architecture services, Aviall Information Services, Dallas

Forgotten Pioneer

I READ WITH INTEREST Frank Hayes' recent installment of "The Story So Far" discussing William H. Inmon's devising of and contributions to the field of data warehousing [QuickLink 37146].

There can be little doubt as to the significance of Inmon's work, but I was disappointed to see no reference to the comparably significant work of Ralph Kimball, who, building upon the practical theory of contributors like Inmon, put forth a paradigm widely recognized in the data warehousing field and used throughout the industry today.

Thomas Palisano
Wallingford, Conn.

OS Does Matter

READER RUSSELL RUGGIERO wrote [QuickLink 37241] in response to Mark Hall's column "Does the OS Matter?" [QuickLink 36387]: "Hall was right on. . . . The operating system should be transparent. Whether 31-bit, 32-bit or 64-bit – who cares, as long as the operating system is availabie, reliable, scalable and secure." How often have offerings from Redmond been called "available, reliable, scalable and secure"? Try telling Bill Gates that the OS doesn't matter.

Toby Fruth
Automation coordinator, Dallas

A Part of Evolution

THE ARTICLE "Microsoft Releases 64-bit SQL Database" [QuickLink 38018] quotes James Governor, an analyst at RedMonk, as saying, "It's the same as ever with 64-bit. It's a technology in search of a mass-market application." I find this to be a surprisingly old-school comment. The computer industry continues to improve performance and capability. With these improvements, we expand the realm of the possible. With every major leap forward in computer technology, applications have caught up, using more of the capability. This, in turn, fuels further improvements. Sixty-four-bit processing is the next logical step in this evolution. As it becomes more commonplace, we will utilize more and more of its capability. Just as with 16- and 32-bit technology before it, this demand won't be a linear track; at some point, the demand curve will go from a gradual increase to a near-vertical line.

Grant Carstensen
Senior systems engineer, Pratt & Whitney, East Hartford, Conn., grant.carstensen@pw.utc.com

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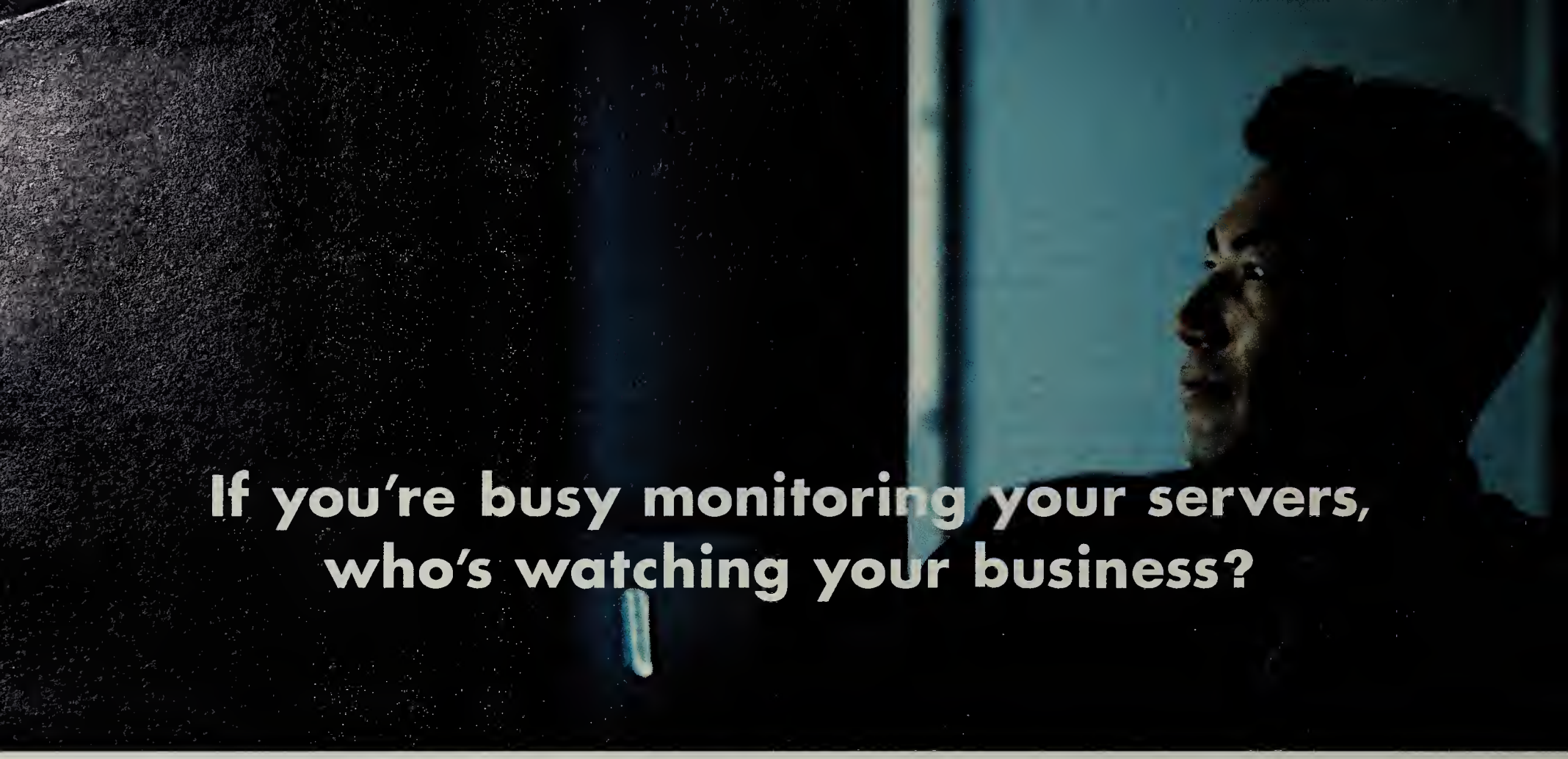

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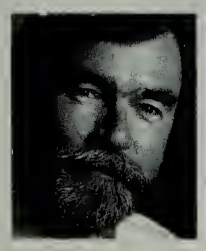
Waves of Change
Some CIOs say that Web services will hit IT like a tidal wave, affecting a wide swath of IT realms, from supply chains to CRM to programming tools. Page 28



OPINION
Web Services' Sharp Edge
Web services are part of a long IT standards tradition. As such, be aware that they're limited in what they can do, says columnist Mark Hall. Page 34

Web Services in Action
Four pioneers that are exploiting this new technology to make valuable connections with customers, partners and suppliers share what they have learned on the bleeding edge of Web services. Page 36

EDITOR'S NOTE

OK, I ADMIT IT: I don't really know whether Web services will transform IT as we know it — or flop.

For one thing, Web services are based on standards, which is a good thing, except that standards have a way of getting bogged down or fragmented or polluted and then fading away.

Plus, there are serious security issues when exposing chunks of code to people outside the corporate firewall. (Just the word *expose* — common in Web services talk — is enough to give your security director the willies.) And I'm not sure that enough thought has been given to liability issues, or even to how participants are going to make money with external Web services.

My colleague Mark Hall certainly has a healthy skepticism about the grandest claims for Web services (page 34). So do I. But I think that if we tone down the hype, there are some modest expectations that have a good chance of coming true:

- XML and SOAP have a bright future. They're simple. They each do one job and do it well.
- Web services will make it easier to integrate internal systems. If nothing else happens, that will be a success story.
- Web services are likely to replace what we now call electronic data interchange. They're a powerful tool for automating supply chain activity among trusted partners.

But will we have an economy based on a giant Yellow Pages directory listing thousands of public Web services, with electronic transactions flying to and fro? Count me among the skeptics there.

Mitch Betts is features editor at Computerworld. *He can be contacted at mitch_betts@computerworld.com.*

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The Web Services Tsunami

SPECIAL REPORT

Already, Web services are being used internally and externally. IT may never be the same.

The Story So Far

Web services are built on the shoulders of earlier technologies, such as client/server and EDI. By Frank Hayes

THE IDEA BEHIND WEB SERVICES is simple: Send a message across a network that triggers an action at the other end — often at another business. But getting to today's Web services has required simplifying several complex technologies: client/server, EDI and SGML.

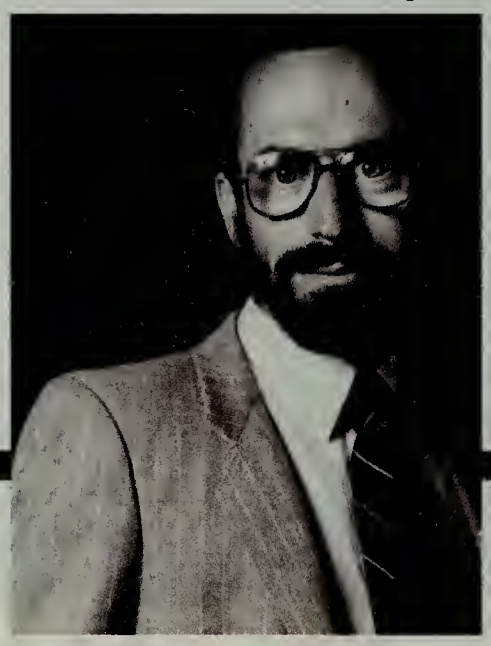
Client/server got its start in 1981, when the founders of an early relational database company wanted to separate the database from the applications that used it. Bob Epstein, Paula Hawthorn and Mike Ubell founded Britton-Lee Inc. to make a stand-alone database server called the Intelligent Database Machine (IDM). The idea was for a large computer to send database queries to the IDM for better performance, security and simplicity.

But the IDM's proprietary hardware couldn't keep pace with the rapid performance improvements in Unix servers in the 1980s. Epstein soon helped found a new software company that used the same idea without the specialized hardware. Sybase Inc. made client/server computing both practical and popular.

Other developers took the client/server idea beyond database access. By 1983, two researchers at Xerox Corp.'s Palo Alto Research Center (PARC), Andrew Birrell and Bruce Jay Nelson, had developed a system of remote procedure calls, or RPCs, so one computer on a network could ask another to perform some of its computing work. And in 1984, Sun Microsystems Inc.'s Bill Joy led the development of Network File System, which used RPCs to give computers on the same network access to one another's files.

But sharing data, files and even computing processes within one company's network was far simpler than sharing business data among companies. That had already begun in a limited way when a group of trucking, railroad and shipping companies formed the Transportation Data Coordinating Committee in 1975 to develop standard electronic versions of shipping manifests and other documents.

By the early 1980s, electronic data interchange (EDI) was being used in the automotive, retail and transportation industries. But EDI was complicated. Far more information could go into a standard EDI document than most companies needed, so they used custom versions, and it was difficult to keep track of which suppliers and customers used what EDI subset. EDI messages were also usually sent over expensive private networks.



How could the complex EDI mess be simplified? The solution was already being developed. In 1969, three IBM developers working on a computer system for law offices came up with a way of using standard tags to identify content within documents. Charles Goldfarb, Edward Mosher and Raymond Lorie called their system the Generalized Markup Language, or GML — a name that happened to include the initials of its three inventors.

By 1980, IBM was successfully using GML in products, and standards organizations were developing a standardized version. In 1986, Standard Generalized Markup Language (SGML) became an official international standard. Like EDI, SGML was large and complex. But SGML included a system for specifying well-defined subsets of the complete set of information tags.

One such subset took off in 1991, when researcher Tim Berners-Lee at Swiss research laboratory CERN created Hypertext Markup Language (HTML) for the first Web browser. In order to send and receive HTML Web pages, Berners-Lee also devised a simplified version of the standard Internet File Transfer Protocol — which he called Hypertext Transfer Protocol, or HTTP.

And in 1996, a World Wide Web Consortium (W3C) working group created the first draft of what it called a "simplified SGML." Two years later, Extensible Markup Language, known as XML, was a standard that some IT shops began to use in e-commerce.

By 1998, researchers at Microsoft Corp. were putting the pieces together: RPCs in the form of documents tagged with XML and sent across the Internet using HTTP, doing what EDI did and much more. They dubbed their system the Simple Object Access Protocol, or SOAP.

IBM joined the effort in 2000, and the two companies defined the Web Services Description Language (WSDL) for identifying the capabilities available from a Web services provider, and the Universal Description, Discovery and Integration system, or UDDI, for directories of Web services.

And in 2002, the Web Services Interoperability Organization brought in dozens of other vendor and user companies, with the promise that Web services would simplify both e-commerce and IT services.

And now, on with the story . . .

1969: IBM develops GML for tagging content in documents for law offices.

1975: The transportation industry develops a system of electronic shipping manifests, called electronic data interchange.

1981: Bob Epstein (right), Paula Hawthorn and Mike Ubell separate applications from databases with their Intelligent Database Machine.

1983: Andrew Birrell and Bruce Jay Nelson at Xerox PARC implement the first working RPCs.

1984: Sun uses RPCs for its Network File System.

1986: SGML becomes an official international standard.

WORLD WIDE WEB CONSORTIUM

1991: Tim Berners-Lee, at Swiss research lab CERN, creates the first Web browser and defines HTTP.

1996: The W3C begins developing a "simplified SGML," which becomes known as XML.

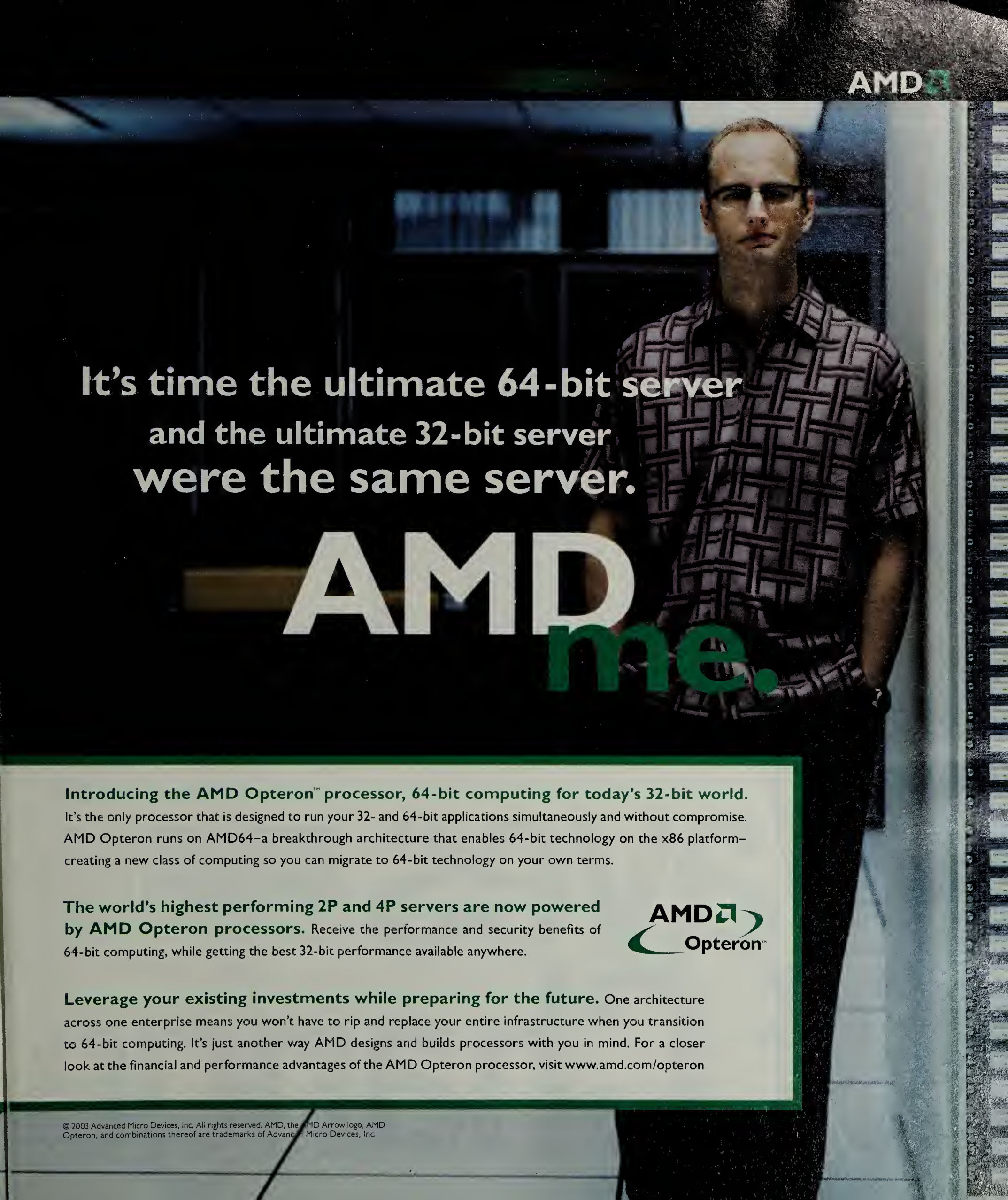
1998: Microsoft combines XML and HTTP into SOAP.

2000: IBM and Microsoft announce WSDL and the UDDI directory system for Web services.

1970 1980 1990 2000

WS-I WEB SERVICES INTEROPERABILITY ORGANIZATION

2002: The Web Services Interoperability Organization is formed by IBM, Microsoft and other vendors and user companies.



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ANDRE V. MENDES, chief technology integration officer at PBS, calls Web services "a tsunami of technology evolution."

KATHERINE LAMBERT

Waves of Change

Web services could affect a wide swath of IT activities, from supply chains to CRM to programming tools. By Bob Violino

WEB SERVICES promise to be the technological equivalent of being in the right place at the right time with just the right information at your fingertips. And some say the technology will hit the IT world like a tidal wave.

"Web services is a tsunami of technology evolution," Andre V. Mendes, chief technology integration officer at Public Broadcasting Service (PBS), said at the *Computerworld* Premier 100 IT Leaders Conference in February. He said the Alexandria, Va.-based nonprofit organization uses Web services to connect upstream with content developers and producers and downstream with public TV stations and viewers. "What we're developing is a supply chain optimization that puts us right in the middle of this equation," said Mendes.

Over the next several years, Web services are likely to enable companies to get a lot more out of technologies such as supply chain systems and CRM, and they're likely to make it easier to build new applications and integrate existing ones. Here are some snapshots of how Web services are expected to change key parts of the corporate IT agenda:

Business Intelligence and CRM

➡ There'll be more **data sharing** among business applications.

Most of the major business-intelligence and CRM vendors plan to support Web services in their products or are already doing so, and Web services are expected to make those applications more

Continued on page 33

BUY, HOLD, SELL...

pacificedge SOFTWARE

Why You Should Manage Your IT Organization Like You're Running a Mutual Fund

Anyone managing an investment portfolio – from a mutual fund manager to the individual with an IRA – understands the challenges of the present economy. There isn't as much money available for investment as one would wish. And it's harder than ever to know how to invest it. The days of the sure bet and ever-rising stocks are long behind us. Today's reality is less about speculation and more about conservation.

To those of you running an IT organization – or concerned with the impact of IT on your business – this should sound familiar. In today's IT environment, there are more projects clamoring for dollars than there is budget available. And it's never been harder to make choices between potential IT investments. The easy stuff has already been eliminated – the trivial projects, the experimental pilots, the stuff that was "cool" but unnecessary – all long gone. With the continuing squeeze on costs, finding new places to cut is going to hurt, and could potentially damage the business as a whole.

Maybe it's time to take a lesson from the mutual fund manager.

Consider all your IT projects as a pool... a collection of investments... a portfolio, in fact. With limited dollars to put in and a goal of maximizing the return on the money invested, how do you decide how to allocate the funds? Look at each individual investment and ask yourself "Should we buy? Hold? Or sell?"

REACHING THE END OF THE ROAD

Once IT projects are seen as a portfolio of investments, rather than a series of projects, it's logical to look for the best way to manage those assets. Decisions on which initiatives get funding can be made on the basis of value to the business, rather than subjective factors. Since investing more in one project means investing less in another, the decision-making process is reduced to a series of comparisons between the costs, risks and rewards of actual and potential investments.

Savvy CIOs will engineer their IT operations for maximum efficiency, effectiveness, and continuous improvement through a value-creating portfolio, including benchmarking and measurement.

– META Group

The portfolio approach also makes it natural to consider the useful life of each asset – the point at which it becomes logical to "sell," or retire the asset. In cash-strapped IT organizations, it can be all too easy to hold on to systems that have long since passed their useful lifetimes: the theory that if it isn't broken, why fix it? These legacy systems often have dedicated – and vocal – constituencies within the internal customer base, providing another incentive to simply avoid raising the replacement question. In reality, however, the opportunity cost of retaining the outdated system can often far outweigh the cost of implementing a new one. (See "Killing Me Softly" on next page.)

HARD CHOICES NEED HARD DATA

So how does one decide between competing initiatives? For our friend the mutual fund manager, objective decision-making requires two things: metrics for all of the contenders based on a common standard, and a set of criteria for selecting winners and losers based on those metrics. In the IT environment, Portfolio Management – such as the Pacific Edge Software solution – provides a framework for considering investments – and their requirements for money, time, resources and effort – in a rational, standardized way.

Basically, you're concentrating on the results. That requires a different kind of management. You're focusing more on performance and outcomes, and less on processes.

– Matthew Light of Gartner, reported in Software Magazine

The first challenge is to develop appropriate common metrics. An obvious problem is that much less is known about a new initiative than about an on-going project. To take an extreme example, with a great idea sketched on the back of a napkin, there's almost no data; with a 5-year-old solidly running project, there may be far too much.

But differences in data don't stop mutual fund managers from making intelligent investment decisions. There's much less information available on an early stage company than there is on an established organization, for example. But that doesn't penalize the start-up in the eyes of a savvy manager. In the same way, the Portfolio Management solution is flexible enough to accommodate metrics of different types, coaxing information out of the available data that allows meaningful comparisons to be made between new opportunities and existing investments.

ARE WE ALL ON THE SAME PAGE?

The second challenge – developing criteria for choosing between contenders – is where the true power of Portfolio Management begins to show itself. In the same way a mutual fund manager balances the mix of investments in her portfolio based on the fund's objectives – income, for example, or short or long-term growth – so can the IT portfolio be balanced by defining goals for the IT organization and the business as a whole.

Portfolio Management makes these objectives explicit and measures each potential investment in terms of how much it contributes to achieving them. The result is a portfolio of IT investments that is aligned with, and will help realize, corporate goals.

This can lead to some surprising revelations. One large wireless service provider, for example, implemented Portfolio Management across its

CONTINUES ON NEXT PAGE

INVESTMENT DECISION-MAKING

Know what you're doing. And why you're doing it.

SPECIAL REPORT

SPECIALFEATURE

CONTINUED FROM PREVIOUS PAGE

entire IT activities. It quickly became apparent that while improved customer service and responsiveness was the over-arching corporate objective, very few of the company's IT initiatives were related to achieving this goal. Funding decisions were being made, not on the basis of their impact on customers, but on the IT organization's internal criteria. Portfolio Management helped reconnect the company's IT efforts to its corporate strategy.

Another common surprise is that many efforts are overlapping -- or that synergies are being missed among initiatives which address common problems. One large insurance company, with several hundred projects, discovered numerous such cases and was able to streamline and consolidate many projects into one. That improves overall portfolio performance and frees up dollars for further investment.

THE TOOLS TO MANAGE -- AND CREATE -- CHANGE

A final characteristic of the mutual fund is that it is actively managed: the mutual fund manager is constantly adjusting the investment mix, testing different scenarios and considering new investment opportunities. In the IT environment, Portfolio Management provides the tools to facilitate the same active management – ensuring the portfolio is always delivering optimum performance. What if we cancel this project? What if we need those resources for something else? What if our objectives change? How fast could we respond to a competitive challenge?

For the mutual fund manager turned CIO, these questions are the order of the day. Trying first one option, then another, comparing the outcomes to current results, and constantly optimizing the investment mix, he or she creates a closed-loop cycle of continuous improvement – and an IT portfolio that truly creates value for the organization.

KNOW WHAT YOU'RE DOING. AND WHY YOU'RE DOING IT.

SPECIAL REPORT

With all the projects and investments your business has going on, how do you align that portfolio with your business needs? The Pacific Edge Enterprise Portfolio Management solution is based on a powerful, but straightforward process that does just that, it transforms the way projects are evaluated, and new initiatives considered.

PHASE 1: PLANNING

The Enterprise Portfolio Management process starts by assessing each potential new investment, along with the resources that comprise the organization's portfolio.

Existing investments are modeled and captured in the portfolio inventory. Detailed information may be captured directly – or imported from other tools such as spreadsheets, accounting and project management packages.

With the portfolio of potential investments defined, each investment is categorized and qualified, based on

BUSINESS FOCUS

Killing Me Softly

When it comes time to kill off an IT investment, the protests can range from the vehement to the vitriolic. The soft targets have all been picked off long ago, so whatever project you ax now, you're killing somebody's pet. Often, it's the older, legacy systems that attract the staunchest defenders. "We've paid for it already," they say. "It works. It costs us nothing to keep it." And that old favorite, "It ain't broke, so why fix it?"

It can be downright tough to get the customer to agree to turn off life support, but the truth is, keeping an old system alive does cost money. So try turning the argument around: "Here's what you could have if we did flip the switch on the old one."

Make the buy-hold-sell argument to the customer and let them share in the decision. Portfolio Management is an effective tool for making the true costs visible, and presenting the new opportunities in ROI terms that any manager can relate to.

If the experience of oilfield services conglomerate Schlumberger is anything to go by, a well-managed process, with analysis tools and recommendations, can reduce the frustration level and the discussion length when these decisions are being made. This helps avoid the overprotection of historically powerful budget areas, and creates a better balance between strategic and business-centric competing projects, such as security vs CRM. It also avoids the "memory loss" problem of large long-running projects, whose originally approved budget can be lost after a few years.

So when the time comes to kill, Portfolio Management makes it easier to pick a project. You may not win everyone round. But with Portfolio Management you will be making a sound business case.

Online, In-Depth

The recent META Group White Paper, IT Investment Management: Portfolio Management Lessons Learned, provides a more in-depth look at Portfolio Management and its impact on the IT value creation process. For a complimentary copy and an interactive web demo, visit www.pacificedge.com/computerworld.

ENTERPRISEPORTFOLIOMANAGEMENT

the organization's management techniques, operational processes and best practices. Key information such as the business case, resource requirements and alignment to corporate strategy are captured.

Then, each investment is prioritized, weighted and ranked using a scorecard approach, to measure its value against standardized, objective metrics such as risk and potential return.

PHASE 2: ANALYSIS

Executives and managers can review key information from multiple perspectives, such as investment type, sponsoring organization, objectives and priority, to gain a thorough understanding of the entire portfolio.

Each existing and potential investment is examined to determine that it is:

- **achievable**, given the resource constraints of the organization
- **balanced**, in terms of potential risk compared to its value to the organization
- **aligned** with strategy and corporate objectives
- **ranked** in order of priority, based on its ability to deliver maximum business value.

PHASE 3: OPTIMIZATION

With the information quantified, standardized and accessible, it is now much easier to collaborate on selecting, prioritizing and sequencing projects.

In practice, this is done by selecting for specific combinations of variable constraints – such as investment inclusion, value, risk and cost. Selection criteria can be modified to generate alternative portfolios, which are then compared and refined.

Through this collaborative process, an optimum portfolio of investments can be defined that best matches the organization's chosen strategic planning objectives.

PHASE 4: MOBILIZATION

Now, the realigned portfolio is translated into actionable plans. Investment priorities, milestones, resource allocation, and budget information are distributed to the operational staff responsible for managing the assets, resources, projects and products.

From this point on, lifecycle management tools and status and performance management tools are used to monitor the performance and results of each initiative as it moves from initial concept to completion. In the case of assets, similar lifecycle management is applied as the asset transitions towards retirement and replacement.

GOING FORWARD, the results of each investment can be assessed in terms of its impact on the organization's overall goals.

Pacific Edge takes a "closed loop" approach to Enterprise Portfolio Management, allowing project, asset and product investments to be inventoried, analyzed, planned and tracked throughout their entire lifecycles. As progress is made, external factors change, and business objectives evolve, the portfolio information is constantly updated to reflect the new reality.

Pro-active planning can also be performed using "what if…?" analysis and "sandbox" trials to compare alternative investment scenarios and test conditions.

AT THE HEART OF THE ENTERPRISE PORTFOLIO MANAGEMENT PROCESS are the individual investments – assets, products, projects and resources – that together comprise the enterprise portfolio. Most organizations have a large number of investments, which will typically be of several different types, each mapping to different functional needs.

As a result, a complete enterprise portfolio can be highly complex, and the Pacific Edge Enterprise Portfolio Management solution includes the ability to logically group and manage "partitions" so that R&D investments, for example, can be planned and evaluated differently than IT investments.

FOR A COMPLETE PICTURE of Enterprise Portfolio Management in action, take a virtual solutions tour at www.pacificedge.com/tour. Or contact Pacific Edge Software at 425.897.8800.

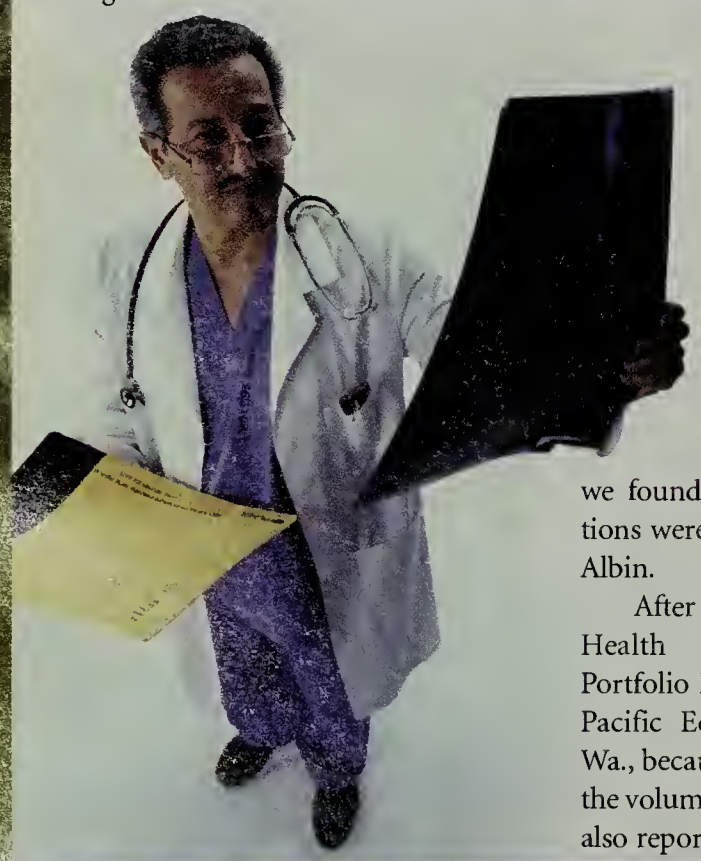
PORTFOLIO MANAGEMENT IN ACTION

Improving the Health of the Enterprise Portfolio

Leading healthcare provider Mercy Health Partners needed a way to balance its large, and growing, volume of IS projects against a fixed pool of resources. There was also the challenge of aligning projects with strategic business goals in a rapidly-changing industry. Enterprise Portfolio Management was a bold approach – and one which has had a positive impact beyond the IS department, maximizing value across the organization.

When James J. Albin joined Mercy Health Partners as CIO, he immediately realized his Information Services department needed a way to quickly identify what IS projects were in progress, and how they impacted the department's limited resources. A recognized leader in providing quality, cost-effective healthcare, Mercy Health encompasses six hospitals in southwest Ohio. With a medical staff of 1,600 professionals, Mercy Health is also a regional leader in collaborating with other organizations to meet community needs.

Like many IS departments in an industry where consolidations and cutbacks are commonplace, Mercy Health Partners faced many challenges – not the least of which was managing some 4,000 projects at any one time. Their project management system consisted of a trouble-ticketing system for allocating work, coupled with an internally developed accounting system based on Microsoft® Access. Clearly, there was a need for a more robust approach to managing the project portfolio and resource utilization.



HANDLING QUANTITY, DELIVERING QUALITY

James Albin recognized that a comprehensive Enterprise Portfolio Management solution was the answer – a solution that could help Mercy Health proactively plan and manage their IS portfolio, easily track where time was being spent, and ensure enough resources were available. "We needed something that could handle the large volume of projects and focus on resource utilization. But we found that not very many solutions were available for IT, " says Mr. Albin.

After an extensive review, Mercy Health selected the Enterprise Portfolio Management solution from Pacific Edge Software of Bellevue, Wa., because it could not only handle the volume and details of projects, but also report on the project portfolio at a strategic level. "We use Pacific Edge to effectively prioritize and track our project portfolio, manage resources, and validate the IS department as a valuable asset to the organization," says Mr. Albin. "The healthcare industry is focused on cost consolidation, which increases demand for IT. So we needed a solution that could help us maximize the value of our IS portfolio."

"The Enterprise Portfolio Management solution from Pacific Edge was a major contributor in reducing our IT costs by $4 million."

James J. Albin,
Vice President & CIO of Mercy Health Partners

BENEFITS TO IS AND BEYOND

For Mercy Health Partners, Enterprise Portfolio Management has delivered on its promise. Besides significant improvements to productivity, the Pacific Edge solution has benefited the IS department through:

- **Aligning projects with strategic goals.** With clear visibility into project portfolios through easily accessible reports, executives and senior management can make better business decisions based on strategic goals. They analyze budget and time information, obtain project completion reports, prioritize projects based on objective criteria, and understand the impact of resource management decisions.
- **Improved resource allocation.** With 100% of resources tracking time, Mercy Health's IS department has reliable data from which to analyze how and where resources are being used. This allows the department to prioritize projects based on resource availability. Even after a 25 percent reduction in resources, there has been no reduction in customer service or project quality, thanks to this ability to prioritize.
- **Greater customer satisfaction.** Since the IS department's internal customers now have access to project information, they are accountable for the quality of their own projects. The department uses reports to clearly communicate the number of projects in a customer's queue, and the number of resources available to work on them – empowering the customer to set their own project priorities.
- **Enhanced project approval and prioritization.** Each potential project passes through an approval committee, which now has access to reports that easily identify high-priority legal and regulatory projects, as well as projects to be approved, canceled, or escalated to the executive committee. Projects stay within limits, backlogs are avoided, and project prioritization and balance is more easily maintained.

For Mercy Health, Enterprise Portfolio Management has become more than just a means of managing a large volume of projects; it is now a key tool for improving business processes to ensure an achievable investment portfolio – one with the right balance of investments to achieve the greatest return.

For more information on Portfolio Management access your complimentary resource kit at www.pacificedge.com/computerworld.

This special feature on Enterprise Portfolio Management was brought to you by Pacific Edge Software, the leading provider of Enterprise Portfolio Management software for global organizations. Pacific Edge delivers closed-loop management solutions that help businesses maximize value and reduce risk in their investment, project, and product portfolios.

Pacific Edge's business-critical solutions include Project Office® and Portfolio Edge™ enterprise software products, professional services, industry-specific templates, and a proven portfolio management process.

To explore how Enterprise Portfolio Management can help you align investment and development activities with business strategy, please contact us at:

Pacific Edge Software, Inc.
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pacificedge SOFTWARE

Portfolio Management for Smarter Business™

Continued from page 28

readily available to internal users and external business partners.

Web services — with their standardized application programming interfaces — will allow analytical tools to be more easily embedded in standard applications, says Michael Corcoran, chief communications officer at Information Builders Inc. in New York. The latest release of the company's business-intelligence product supports Web services, allowing reports to be created and published as a Web service accessible from Java 2 Enterprise Edition or Microsoft Corp.'s .Net environment. "Web services will make business-intelligence components usable with many other applications," such as call center or Web customer service applications, Corcoran says.

Just imagine the systems that could be improved with real-time transactional data delivered by Web services. For example, a manufacturer could use a business-intelligence system to forecast demand for raw materials and then employ Web services to relay the data to numerous suppliers producing those materials. An insurance company could more easily and quickly send CRM information — such as a customer's previous complaint about a policy — to a call center agent to help provide better service.

"The point of Web services is to make it easier for people to construct and integrate applications," says Henry Morris, an analyst at Framingham, Mass.-based market research firm IDC. "Web services, combined with standards like XML, will make it easier for people to tie business-intelligence and CRM applications together. That's where you get the real value out of business intelligence; not just getting a report, but being able to act on it and get feedback."

Joe Wanzek, vice president of IT at American Equity Investment Life Insurance Co. in Des Moines, Iowa, says his company already has an in-house CRM application that provides transaction information to customer service representatives. But with Web services, Wanzek expects to be able to deliver that data via the Internet to customers just as quickly. That will eliminate the need for costly and time-consuming phone calls to work out customer complaints or answer queries, he says.

Supply Chain Systems

➨ Transactions with trading partners will be **100% automated.**

The adoption of Web services is expected to enhance the way businesses conduct transactions with one another electronically and the way information moves through the supply chain.

Mitsubishi Motors North America Inc. in Cypress, Calif., uses Web services to link 700 dealers through its portal — a single point of entry for dealers online, says CIO Tony Romero. "Anything a dealer needs to do can be done through the portal, no phone calls necessary," he says.

The key to easier integration is the fact that Web services are based on widely adopted standards such as XML. "It changes the integration game; it will be much easier to [link systems] because of the open standards," says Toby Redshaw, corporate vice president of IT strategy, architecture and e-business at Motorola Inc.

"When you map the supply chain today, starting with source material, all the way to product repair, you'll find there are 10 to 12 disconnected processes with big gaps and integration issues," such as how to handle product repairs and returns, Redshaw says. Web services will help trading partners fill those gaps by providing better communication among their supply chain applications, he adds.

In many cases, transactions among trading partners, such as ordering supplies, fulfillment, billing and inventory management, will be wholly automated, says Mike Gilpin, an analyst at Giga Information Group Inc. For example, a retailer could develop a standardized, automated program for ordering goods and then use the program to allow its purchasing applications to work with suppliers' inventory systems.

This will be a less complex and time-consuming endeavor than it would be without Web services. Automation will also help reduce costs, Gilpin says. "One of the impediments to B2B commerce has been cost, and I think costs will be reduced gradually by Web services," he says.

In addition, Gilpin says, the combination of Web services and technologies such as radio frequency identification tags will enable companies to track the location of products in real time as they move through the supply chain, while gathering data about overall demand, purchasing trends and inventory.

Within three years, Redshaw predicts, intelligent Web services will emerge that completely automate a lot of supply chain management functions, such as handling customer queries from call centers or feeding customer-retention data to salespeople in real time.

Vendor Says Mobile Apps Are Years Away

The combination of Web services and mobile devices such as cell phones, PDAs and tablet PCs will give users customized access to critical data in real time, says Joe Owen, chief technology officer at **XcelleNet Inc.** in Alpharetta, Ga., which offers software for connecting mobile users and remote sites to corporate systems. For example, he says, a sales distributor in the field could use a single application from a mobile device to access inventory data or customer profitability information – without the need for a large and costly data warehouse.

But Owen notes that many of the thin-client benefits of Web services are likely years away from commercial availability because of the limitations of current wireless network connections.

Yet the marriage of Web services and mobile devices is inevitable, he says, because on-the-go employees will need access to various types of corporate data behind the firewall. Web services will provide a means for companies to integrate enterprise applications and mobile devices without spending big bucks on integration projects.

"With Web services, you can provide access to applications [from mobile devices] without having to consolidate data from wildly different formats and databases," Owen says.

– Bob Violino

Application Development

➨ Development will be **faster,** with recycled code.

Industry experts expect Web services to speed up and simplify application development, allowing IT departments to not only create new applications in less time, but also to deliver them to more internal and external users.

"You won't see a whole new array of things that you couldn't do before because of Web services, but you'll see application development enabled much more quickly," says Larry Calabro, a partner in the technology integration unit at Deloitte Consulting in Chicago. Calabro says Web services standards will make it easier for companies to build applications that more effectively integrate existing software packages such as CRM and ERP. "The focus of application development will be to make all those assets work together to better meet business goals and better serve customers," he says.

Web services will make it easier for less-skilled people to more rapidly build applications through their standardized application development tools, says Michael Blechar, an analyst at Gartner Inc. "Web services standards like XML and UML are providing much more automation" in the process of developing and sharing applications, Blechar says.

The ability to recycle software code is another benefit, he says, pointing out that teams of developers will be able to reuse components and place them into applications, rather than having to rewrite existing code. "The whole philosophy of Web services is based on reuse," Blechar says. "Clients, supply chain partners and people inside the organization will be able to reuse components."

Wanzek of American Equity agrees. "As XML becomes more of a common tool," he says, "it will allow us to provide quicker and more reusable application development." ◗

Violino is a freelance writer in Massapequa Park, N.Y. Special projects editor Ellen Fanning contributed to this article.

SMART SERVICES

A former CIO discusses "what Web services can do for business intelligence."

QuickLink 37326
www.computerworld.com

SNAPSHOTS

Top Five Perceived Benefits

What benefits do you expect to see from adoption of Web services applications?

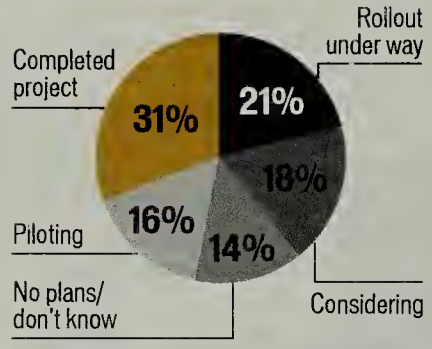
- Improved efficiency/process speed **46%**
- Cost reduction **41%**
- Improved customer service **25%**
- Improved connectivity **20%**
- Better systems integration **20%**

Base: Survey of 262 global executives (75% were CIOs), who provided unaided responses; multiple responses allowed

SOURCE: ACCENTURE LTD., APRIL 2003

Implementation Stages

At what stage of implementation are you with Web services technologies?



Base: Telephone survey of 877 IT decision-makers at North American companies

SOURCE: FORRESTER RESEARCH INC., CAMBRIDGE, MASS., FEBRUARY 2003

Top Seven Applications

The most common Web services applications currently being implemented:

- Employee benefits **53%**
- E-commerce **42%**
- CRM **34%**
- Supply chain **33%**
- Knowledge management **32%**
- Internal finance **25%**
- Data storage **24%**

Base: Survey of 262 global executives (75% were CIOs); multiple responses allowed

SOURCE: ACCENTURE LTD., APRIL 2003

MARK HALL

Web Services' Sharp Edge

WEB SERVICES AREN'T SLICED BREAD, nor are they the best things since. They're just sharper knives in your IT kitchen. And as with sharp knives, you have to be careful not to hurt yourself with them.

Web services give you a higher level of abstraction than an application server or middleware, such as CORBA. That abstraction makes it easier for software developers to program relationships among disparate systems, because Web services offer a broader (but far from complete, mind you) set of standards.

Web services are the ideal tool for tying creaky but essential mainframe software to your spunkier e-commerce applications. One integrator told me that 25% of his company's integration work is based on Web services, and that percentage is growing quickly.

No wonder. Web services make things so easy. Just output everything in XML, and you're halfway home, right?

Sorry. Not quite.

What XML format is your application asking for again? CXML, the Commerce XML? Would that be Version 1.0, 1.1 or 1.2? Or was that CML, the Chemical Markup Language? Maybe it was BPML? eXML? Or my personal favorite, YML, the Why Markup Language?

If you're using Web services, you still need to be keenly aware of the format of the services you intend to consume or share within applications. You can't simply grab the data and assume that the format makes sense for your purposes. XML is good, but it's not that good.

Mark Pezel, a senior management consultant at TUSC, a software consultancy in Lombard, Ill., eloquently summed up XML to me last month: "It's intelligent ASCII." Very cool. But not sliced bread.

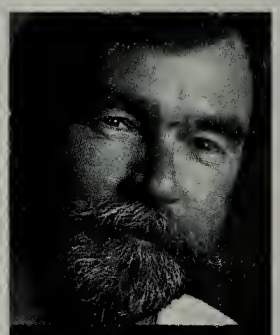
In addition to the complex XML formats developers face, IT operations are forced to wrestle with the major problem of Web services management. As Web services proliferate and become easier to build and deploy, their application dependencies, their requirements for quality of service and service-level agreements, and their performance management will fall on IT's shoulders.

If you don't control the source of the service your application needs in order to be fully functional, how can you possibly make promises about quality of service or service-level agreements?

Well, you can't without ironclad agreements with your Web services provider. That's not impossible; it's just another item on your to-do list.

To further aggravate the management problem, there are no Web services management standards — only fledgling products and no best-practices track record to fall back on. You're on your own.

Then there are the vendors, which are the primary drivers behind the Web services movement. They've already begun to squabble publicly about how far to push Web services standards. Most of the smaller companies involved are in agreement that more standards are necessary; the bigger ones less so, just like with every other vendor-driven standards process, from 802.11 to database adapters.



MARK HALL is *Computerworld*'s opinions editor. Contact him at mark_hall@computerworld.com.

Security is another potential problem. Although I've been assured that Web services security has been well designed, we really don't know yet because there are no significant Web services-based applications being used outside corporate firewalls. Once that happens and the crackers (virtually) get their grubby fingers on them, we'll see how strong the security really is. The fact that Web services are, to date, a behind-the-firewall technology speaks volumes on IT's wise reluctance to let them loose on the Internet before wider testing and deployment.

All that skepticism aside, I think Web services are a huge step in the direction of IT standards that will help eliminate information islands or silos (choose your favorite metaphor). They follow in the honorable tradition of Ethernet, ODBC, Java and other technologies that bridge the natural differences among computing systems. When these other standard technologies emerged, it didn't mean IT managers could sit back with a cold one in hand and ignore networking, database or application-integration problems. They just solved them with different, more advanced tools.

And that's all Web services are or ever will be: another tool for you to help users sail out to those islands or knock down those silos. Just don't cut yourself with them.

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STEVE ELLIS, executive vice president of the wholesale services group at Wells Fargo in San Francisco.

SETH AFFOUMADO

Web Services

These pioneers are using Web services to make valuable connections with customers, partners and suppliers. Here's what they've learned out on the bleeding edge. By Preston Gralla

WEB SERVICES may be the latest hot topic of conversation, but for many companies, that's all the technology amounts to — talk. Not so for four pioneering companies where Web services are already in operation and paying big dividends. We talked with IT managers at these organizations about how they've learned to exploit the technology by reusing Web service modules and better integrating their own internal business processes with those of external partners.

Bank Cuts Production Time, Speeds Payment Delivery

For years, Wells Fargo & Co.'s wholesale banking operations dealt with a polyglot of methods for handling wire transfers and interbank electronic payments for its 100 largest corporate customers. Those customers sent payment instructions in formats such as EDI, flat files and XML, which forced Wells Fargo to build separate channels to tie each customer's data into the bank's back-end systems.

No longer. The banking giant's ePayment Manager Web services module now examines and parses payment data in a wide variety of formats and sends it to Wells Fargo's back-end systems, where payments are processed and customer acknowledgments are sent.

Rather than build a custom setup for each customer, existing Web service modules are snapped together in Lego-like fashion. "Using Web services reduces [account setup] times by 30% to 50% for each

new customer we add," says Steve Ellis, executive vice president of the Wells Fargo wholesale services group in San Francisco. The bank saves development time and money, and customers don't have to spend time and money altering their data formats.

The bank started work in April 2002, and the system was in operation by November of that year.

LESSONS LEARNED: Ellis' advice for others looking to build Web services has nothing to do with technology and everything to do with management. "We make the technology and the business people sit together so they understand one another before we begin," he says. "That's the most important thing you can do. You need the business people to 'get' IT, and the IT people to 'get' business."

VENDOR AND TOOL: webMethods Inc.'s webMethods Integration Platform.

Retailer Integrates With Business Partners, Cuts Telecommunications Costs

At Things Remembered Inc., the largest personalized gift retailer in the U.S., Web services are helping to speed up deliveries to customers. Before the Web services technology was in place, when a customer ordered a monogrammed vase from Things Remembered's online partner 1-800-Flowers.com Inc., the Highland Heights, Ohio-based gift retailer had to pull that order manually from the florist's Web site. That process took time and didn't tie the order into Things Remembered's real-time inventory system. To solve the problem, parent company Cole National Corp. in Mayfield Heights, Ohio, built a Web services module that directly ties the 1-800-Flowers.com site to the Things Remembered order-entry systems.

Now that the company has built a basic tool kit of Web services objects, it will reuse them as part of a larger Web services initiative, says Mark Fodor, director of e-business at Cole National. That initiative will include integrating with other online business partners, he says.

In addition, Web services will eventually be used at point-of-sale systems in the 760 Things Remembered retail stores, says Fodor. Currently, managers must dial into the Cole internal network to check on inventory. The stores also connect to the Internet through an Internet service provider. But because a Web services application has already been built that ties into the inventory system, the Internet connections will eventually be used to check on inventory. That will save telecommunications costs and reduce the time it takes to confirm customer orders, he says.

LESSONS LEARNED: The key to developing a Web services application, Fodor says, "is to make whatever you build reusable, so that you can plug it in for other purposes. We built ours with that mind-set, and it's paying off."

VENDOR AND TOOL: IBM's WebSphere.

Health System Speeds Access to Patient Information

With an enormous amount of data and disparate computing systems, the health care industry is a natural fit for Web services. Providence Health System, a $3.3 billion health care provider in Seattle, is a case in point. It uses Web services for enterprise application integration and to build small CRM systems. As a result, Providence cut its development costs, decreased the amount of time it takes to bring a new service for customers to market by 30% to 50% and now provides patients and health care workers immediate access to patient information.

Mike Reagin, Providence's director of research and development, says the company "is very distributed, and so we have many in-house legacy systems, from old Mumps systems to new Microsoft ones, and we needed a consistent way of aggregating data from all of them."

The company started development work on Web services last spring and had its first module working within four weeks — a far faster turnaround time than for projects using other types of technology, Reagin says. Patients can now look up benefits information online and use a portal for transactions. Providence has relationships with WebMD.com and Wellmed.com, so when patients log onto those Web sites, all their personal information (height, weight, date of birth) is already populated via Web services modules that link to Providence's back-end systems.

Similarly, doctors can connect to a portal that aggregates patient information from all of Providence's clinics, hospitals and offices. The portal "improves clinical care and patient care, and hopefully reduces costs and increases efficiencies," Reagin says.

> **"We make the technology and the business people sit together so they understand one another before we begin. That's the most important thing you can do. You need the business people to 'get' IT, and the IT people to 'get' business.**
>
> **STEVE ELLIS,** EXECUTIVE VICE PRESIDENT, WHOLESALE SERVICES, WELLS FARGO

LESSONS LEARNED: Reagin recommends getting the right tool set and management platform in place before launching. "Going into development we were worried, 'What if we have a hundred Web services out there, how would we manage them all? Would it get chaotic?' " he says. By first choosing a platform, he says he's been able to keep track of all the Web services modules and reuse existing ones.

VENDOR AND TOOL: Infravio Inc.'s Web Services Management System.

Student Clearinghouse Benefits From Immediate ROI

The National Student Clearinghouse (NSC) has developed Web services that significantly cut the time it takes for employers, loan providers and others to verify that job applicants hold degrees from the colleges they claim to have attended. The Herndon, Va.-based nonprofit association expects to pay back the entire cost of its Web services development in a single month.

The NSC maintains a database of student records from more than 2,700 schools and verifies student records for a fee. Its database is accessed more than 100 million times annually, mostly by large screening firms, says Mark Jones, NSC's vice president of marketing and business development.

The problem had been that those screening firms didn't have direct access to the NSC database and would open a record in their own databases and call the school directly with a verification request instead of going through the NSC. If they did contact the NSC directly, they had to call on the phone and ask staff members to verify the information, an expensive and labor-intensive process.

The solution? NSC built a Web services application that ties screening company databases directly into the NSC database. Jones estimates that development costs were $25,000, which can be recouped in one month in increased revenue and lowered costs.

LESSONS LEARNED: Jones' advice concerns business practices, not technology. "What surprised me the most is that there really haven't been technical issues -- the technology itself is almost trivial," he says. "Most important is to make sure that the business model is right — make clear why you should do this with a trading partner, and calculate your ROI ahead of time."

VENDOR AND TOOL: Flamenco Networks Inc.'s Web Services Management software.

Gralla is a freelance writer in Cambridge, Mass. Contact him at preston@gralla.com.

In Action

LITTLE FISH, BIG POND

A 12-person company uses Web services to launch e-commerce applications and gain an edge in the mammoth health care industry.

QuickLink 37822
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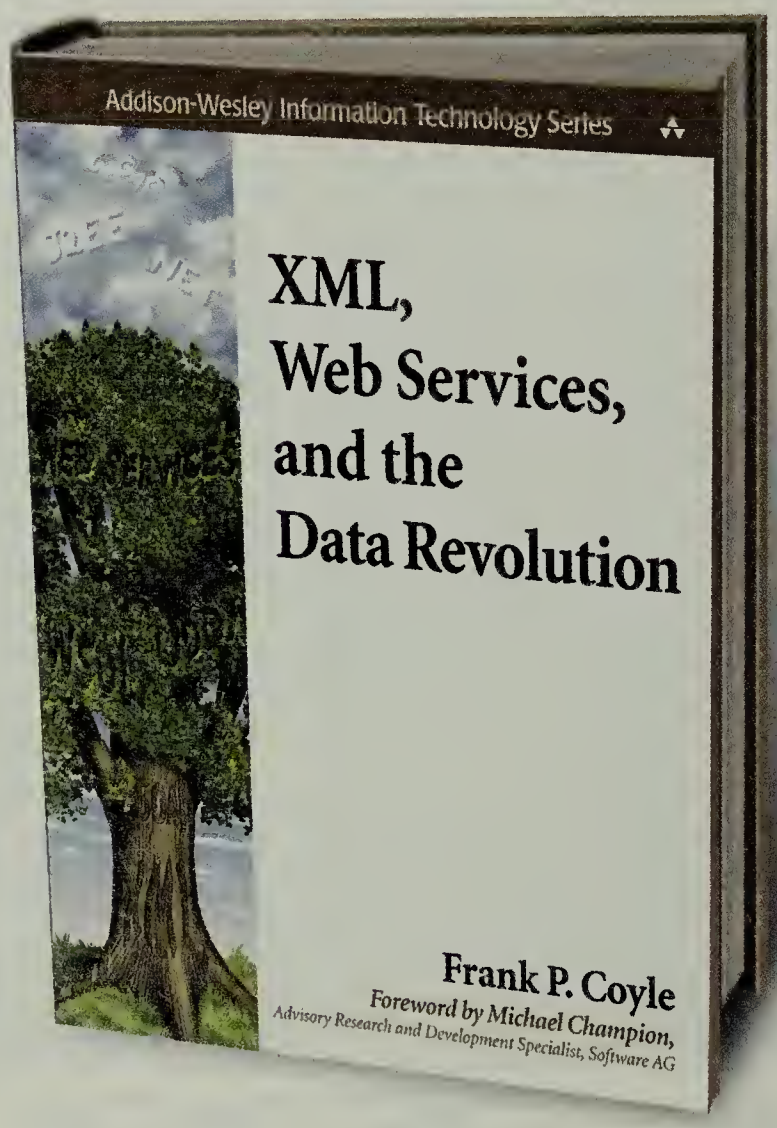
Web Services, Si

Here's an executive guide that explains XML, SOAP and Web services — in plain English. By Frank P. Coyle



THE WEB AND XML HAVE changed our perspective about what data can do. Instead of regarding data as something to be stored in a database and shuttled across existing networks by systems locked in a tight embrace, the XML family of standards allows data to move freely about the loosely coupled Web and create new business opportunities.

XML is a meta-language (literally a language about languages) defined by the World Wide Web Consortium (W3C), one of the main organizations driving the push to open Web standards. In its simplest sense, XML is a set of rules and guidelines for describing structured data in plain text rather than in proprietary binary representations. However, as a phenomenon, XML goes beyond its technical specification. Since its standardization by the W3C in 1998, XML has been the driving force behind numerous other standards and vocabularies that are forging a fundamental change in the software world.

BOOK EXCERPT

In XML's short history, its influence has been felt in three waves, from industry-specific vocabularies, to horizontal industry applications, to protocols that describe how businesses can exchange data across the Web. One of the key developments has been SOAP, the protocol that has opened the Web to program-to-program communication and is the basis for Web services.

The XML Advantage

XML has had an impact across a broad range of areas. Why?

■ XML files are human-readable. XML was designed as text so that, in the worst case, someone can always read it to figure out the content. This isn't the case with binary data formats.

■ Widespread industry support exists for XML. Numerous tools and utilities are being provided with Web browsers, databases and operating systems, making it easier and less expensive for small and medium-size organizations to import and export data in XML format.

■ Major relational databases now have the native capability to read and generate XML data.

■ A large family of XML support technologies is available for the interpretation and transformation of XML data for Web page display and report generation.

XML's capability to work with other technologies has opened up new possibilities for exchanging business information across the Web, essentially creating an extended enterprise. One aspect of this new extended enterprise is the emergence of Web services. For some, Web services represent the next evolutionary step for the Web, extending it from a network that provides services to humans to one that provides services to software looking to connect with other software. Web services is an ambitious initiative that is moving the Web to new levels of software-to-software interaction while trying to fulfill object technology's promise of reusable components.

Web Services 101

Web services rely on several key underlying technologies, in particular Universal Description, Discovery and Integration (UDDI); Web Services Description Language (WSDL); and SOAP.

■ UDDI is a protocol for describing Web services components that allows businesses to register with an Internet directory so they can advertise their services and so companies can find one another and carry out transactions over the Web.

■ WSDL is an XML format for describing how one software system can connect and utilize the services of another software system over the Internet. It supports Web-based computing services that target computer programs rather than human users.

■ SOAP is the XML glue that lets clients and providers talk to each other and exchange XML data. SOAP builds on XML and common Web protocols (HTTP, File Transfer Protocol and Simple Mail Transfer Protocol) to enable communication across the Web. SOAP brings to the table a set of rules

mply Put

for moving data, either directly in a point-to-point fashion or by sending the data through a message queue intermediary.

One of the main implications of SOAP is a change in how we think about distributed computing. Prior to SOAP, there were three basic options for doing distributed computing: Microsoft Corp.'s Distributed Component Object Model, Java's Remote Method Invocation or Object Management Group Inc.'s Common Object Request Broker Architecture. These technologies are still in widespread use. Their drawback is that they limit the potential reach of the enterprise to servers that share the same object infrastructure. With SOAP, however, the potential space of interconnection is the entire Web, which is why there is such intense interest in technologies that can leverage the power of SOAP. One of these technology efforts is Web services.

The Web services framework is both a process and a set of protocols for finding and connecting to software exposed as services over the Web. By assuming a SOAP foundation, Web services can concentrate on what data to exchange instead of worrying about how to get it from Point A to Point B, which is the job of SOAP. To make things even easier, SOAP also defines an XML envelope to carry XML and a convention for doing remote procedure calls so a service can advertise "call me here," and a program will be able to do so without concern for language or platform.

A Web service can be anything, from a movie review service to a real-time weather advisory to an entire hotel- and airline-booking package. The Web services infrastructure ensures that even services from different vendors will interoperate to create a complete business process. Web services take the object-oriented vision of assembling software from component building blocks to the next level. With Web services, however, the emphasis is on the assembly of services, which may or may not be built on object technology.

Web services represent an industry-wide response to the need for a flexible and efficient business-collaboration environment. Technically, it's a way to link loosely coupled systems without binding them to a particular programming language, component model or platform. Practically, it represents a discrete business process with supporting protocols that functions by describing and exposing itself to users of the Web and being invoked by a remote user and returning a response. It includes:

- **Describing:** A Web services application describes its functionality and attributes so that other applications can figure out how to use it.
- **Exposing:** Web services register with a repository that contains a "white pages" holding basic service-provider information; a "yellow pages" listing services by category; and a "green pages" describing how to connect and use the services.
- **Being invoked:** When a Web service has been located, a remote application can invoke the service.
- **Returning a response:** When a service has been invoked, results are returned to the requesting application.

The driving force behind Web services is the desire to allow businesses to use the Internet to publish, discover and aggregate other Web services using the global underpinning of SOAP. The fact that the delivery of Web services requires only the Internet means that legacy code and data as well as object systems can plug into Web services frameworks.

Opportunity and Risk

Web services represent a new model of software distribution and interconnection based on the notion of services globally available over the Web rather than object-to-object connections over limited networks. Because of the global scope of Web-based services, the potential financial upside is extremely attractive. Financial incentives include new revenue opportunities through creation of private trading networks, increased revenue through expanded distribution channels, and reduced inventory and transaction costs.

Web services also promise improved collaboration with customers, partners and suppliers. They provide opportunities for reducing integration time and expense compared with existing enterprise application integration approaches. There is also opportunity for improved supply-chain efficiencies; quick response to changing market conditions and customer preferences by utilizing loosely coupled modular services; and improved customer service by allowing customers and trading partners access to core systems.

However, the Web services vision is still new and not without risk. Despite the significant potential, it remains to be seen how Web services will play out on a large scale. It's expected that Web services will begin to play a role in the delivery of simple services, but until the technology matures, complex trading-partner interactions will still require an upfront human element to solidify agreements. ◗

Adapted, with permission, from the book XML, Web Services, and the Data Revolution, *by Frank P. Coyle (Addison-Wesley, 2002). Coyle is director of the software engineering program at Southern Methodist University in Dallas.*

XML BASICS

A brief excerpt of Frank Coyle's book points out that XML has been successful because it was designed to do only one thing and do it well:

QuickLink 38144
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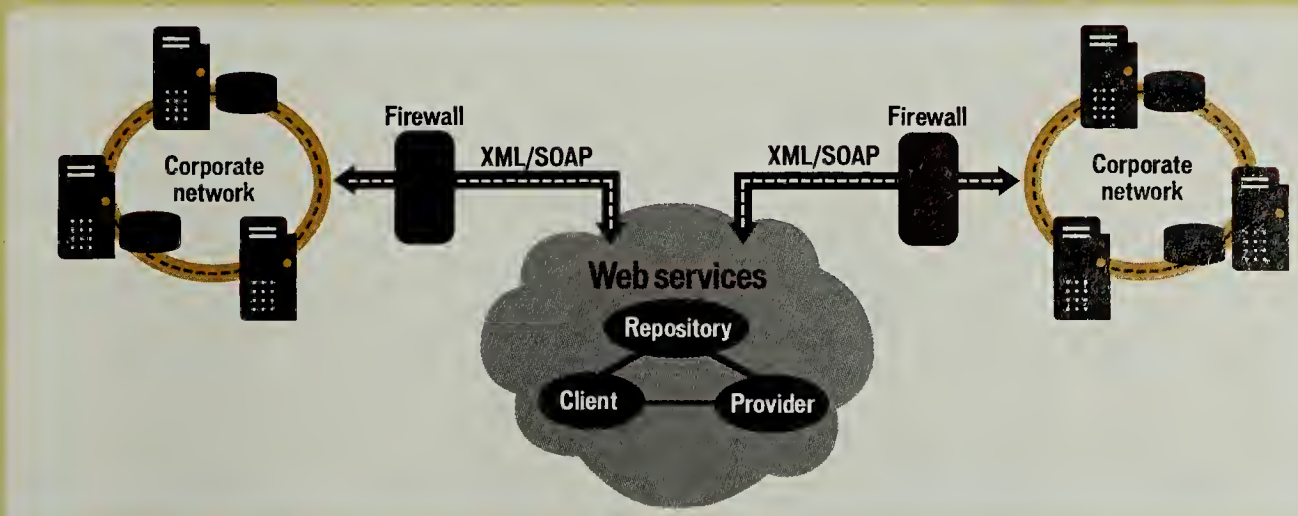
Web Services = Repository + Client + Provider

Web services provide a way for clients to discover and connect to Web-based software services. There are three major aspects to Web services:

- **A service provider** provides an interface for software that can carry out a specified set of tasks.
- **A service requester** (the client) discovers and invokes a software service to provide a business solution. The requester will commonly invoke a remote procedure call on the service provider, passing parameter data to the provider and receiving a result in reply.
- **A broker** (the repository) manages and publishes the service. Service providers publish their services with the broker. Clients then request access to those services by using the bindings defined by the service provider.

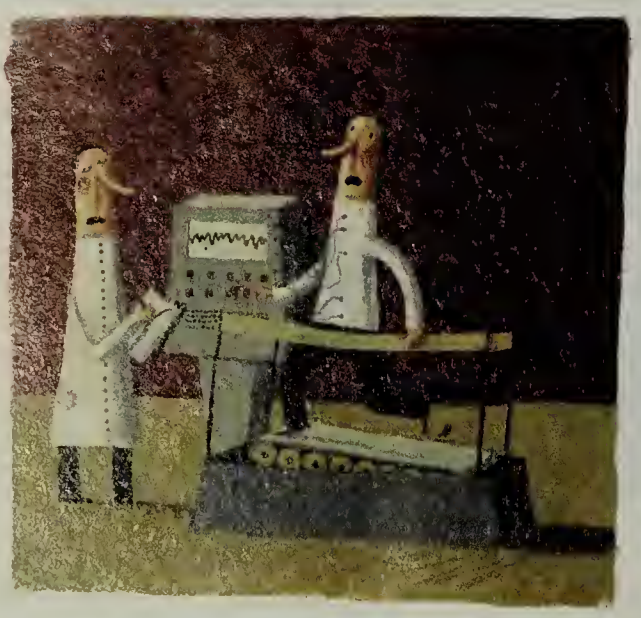


Testing Is Key To Success

Highly automated Web services must work flawlessly, or they'll cause a chain reaction of business errors. By Mark Leon

Testing Advice

- **Don't waste the work you put into testing by using it only once.** Think about how testing routines can be reused for monitoring your Web services after they're deployed.
- **Don't look at Web services testing as a one-shot deal.** Testing needs to be iterative.
- **Test frequently under a variety of conditions.**
- **Testing Web services inside the firewall** (for enterprise application integration, for example) requires knowledge of SOAP and WSDL but isn't that different from testing more traditional applications. There are tools available to help you do this.
- **Testing Web services that use UDDI to find and bind to other Web services outside your company** is a more complex undertaking and will probably require special expertise, customized testing tools or consulting help.



FREDERIQUE BERTRAND

WEB SERVICES — those loosely coupled, machine-to-machine transactions — have to work error-free, without human intervention, to achieve their much-heralded efficiency benefits. It takes only one software error to turn a Web services application into a disaster.

"The automation of Web services is definitely a two-edged sword," says Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif. "There is the potential for a cascade effect. Imagine a faulty transaction linked to a complex supply chain, and consider the speed in which errors can propagate."

Therefore testing, which is always important, is even more critical for Web services.

There's already a new breed of Web services testing tools available from vendors such as Mercury Interactive Corp., Parasoft Corp., Empirix Inc. and Cape Clear Software Inc. Most are able to read Web Services Description Language (WSDL) files, which is usually the first step on the road to testing.

Venturing Outside

Testing Web services inside the firewall — for application integration projects, for example — isn't much different from testing traditional applications. But Web services that reach outside the firewall raise new testing issues.

Insurance company MetLife Inc., for example, uses Web services to connect dental providers and employers. But "with loosely coupled applications, you don't even know where all the pieces reside," says James August, vice president and chief architect for the institutional portfolio at MetLife in New York.

August worked with BearingPoint Inc. consultants to design testing processes for the new Web services applications. He says it would be nice to have more testing tools, but the market is still immature. "What we are after," he says, "is good regression testing that we can apply bottom-up and top-down." Regression testing selectively retests software that has been modified to ensure that bugs have been fixed and that no new problems have been inadvertently added. Bottom-up testing checks individual components, whereas top-down testing checks the entire set of applications.

Measured Progress Inc., an educational testing firm in Dover, N.H., uses software from Waltham, Mass.-based Empirix to help test a highly distributed Web services application. Web services link the company's .Net platform to various school testing systems across several states. Edmund Ashley, manager of software development at the company, says Web services ease the integration headaches but also introduce new levels of testing complexity.

The fact that Web services are good at linking a hodgepodge of systems also means that they deliver a more unpredictable stream of data across the company's network. "We need to be aware of the blend of data coming in," says Ashley. "Empirix helps us test mixes of SOAP and HTTP [data], for example. Understanding how this affects the system is critical, especially as our loads increase."

Loads that can increase unpredictably will be one of the biggest testing challenges for Web services that link servers to external clients, says Adam Kolawa, CEO and founder of Parasoft in Monrovia, Calif. And, Kolawa continues, "it will be more important than ever to test for the unexpected."

"We call it 'monkey testing,' " he explains. "You want to throw weird requests at the server and see how it behaves."

MIB to the Rescue?

So far, there isn't much use of the UDDI Web directory standard, except in pilot projects, says Alejandro Danylyszyn, senior manager of technology integration at Deloitte Consulting in New York. But even in the pilot phase, UDDI deployments will probably require more than a window into WSDL for testing.

Benjamin Sherman, a senior consultant at Greenwich Technology Partners Inc. in Harris, N.Y., says tools that allow developers to see how components in a Web service are performing aren't widely available. Sherman says he's alarmed that "IT shops have no way to test Web services applications with complex dependencies, so they are forced to just throw them over the wall and see how they do."

But, he adds, improvements are on the way. The Internet Engineering Task Force has proposed an application performance management Management Information Base, or APM MIB. (MIBs have been around for a long time in network operations. They're standardized databases that allow remote management and testing of IT devices.) Sherman says a Web services MIB would provide standard metrics on any Web services component.

Not everyone agrees that a new MIB is the way to go. Ido Sarig, vice president of technology strategy at Mercury Interactive in Sunnyvale, Calif., says he thinks the same testing and management functions can be added to future versions of WSDL.

In any case, users are pressing ahead with existing tools, even though the tools are still evolving and there isn't yet agreement on standards for Web services testing. Experts say that despite the uncertainty in this young market, IT managers should have an aggressive plan for testing Web services applications if they expect them to be successful.

Leon is a freelance writer in San Francisco. Contact him at mrleon@usfca.edu.

TESTING IN AN ORGANIC WORLD

Testing Web services can enable new functionality, as well as new levels of quality and reliability, writes columnist Linda Hayes:

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SEEBEYOND

The Almanac

An eclectic collection of research and resources. By Mitch Betts

Oops! The Cost of Software Bugs

The annual cost of inadequate software testing – in other words, software defects – on the U.S. economy:

- SOFTWARE DEVELOPERS:
- SOFTWARE USERS:
- TOTAL: , or 0.6% of the U.S. gross domestic product

SOURCE: ESTIMATE BY RESEARCH TRIANGLE INSTITUTE FOR THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, GAITHERSBURG, MD., MAY 2002

'Amazing Grace' Would Be Happy to Hear This

The Cobol programming language, developed in 1959 and based on earlier work by Rear Adm. Grace Hopper, seems to have a future even in the newfangled world of Web services. The keeper of the flame is Micro Focus International Ltd., which last week announced the first product enabling Cobol code to be deployed directly as a Web service without requiring third-party software.

The vast majority of the world's business applications are still written in older languages like Cobol. "For most banking and insurance companies, those [Cobol] systems are their business and their differentiation from the competition, and they're not about to throw them out," says Ian Archbell, vice president of product management in Micro Focus' Sunnyvale, Calif., office.

So Archbell says Micro Focus is gearing up to help companies unlock their existing software assets and "tie together the traditional world and the new world." He says Micro Focus is investing 20% of its revenue in R&D to cover three areas: making sure that Cobol is a "first-class citizen" when Web services are used to integrate applications, that Cobol and Java interoperate, and that XML support is provided.

The Language Popularity Index

The monthly Tiobe Programming Community Index shows the popularity of programming languages, based on hits at the Google search engine. It's a rating that roughly indicates the worldwide availability of skilled engineers, courses and third-party vendors for each language, the index creator says. Caution: The index doesn't say which is the best language, and it isn't based on the lines of code written.

LANGUAGE	RATING
Java	51.2
C	37.4
C++	32.8
Perl	18.7
Visual Basic	17.2
PHP	9.4
JavaScript	6.8
SQL	5.5
C#	3.9
Delphi/Pascal/Kylix	2.2
Python	2.1
Cobol	2.0
RPG	1.9
Fortran	1.8
Lisp	1.5
Ada	1.3

For methodology: www.tiobe.com/tpci.htm

SOURCE: TIOBE SOFTWARE BV, THE NETHERLANDS, MAY 2003

Businesses Can Capture The Open-Source 'Magic'

Corporate application-development shops can learn something from the open-source movement, says Bill Portelli, CEO of CollabNet Inc. in Brisbane, Calif. "What was the magic that made Apache and Linux work, in the absence of a company? It was a collaborative development process that includes early involvement of all of the stakeholders. And we've tried to bottle that magic," he says. CollabNet offers Web-based tools for collaborative software development that attempt to mimic the open-source world. (The company's founder, Brian Behlendorf, was co-founder of The Apache Software Foundation.)

Portelli says CollabNet tools let programmers, systems integrators and end users work together in real time — even from far-flung locations — cutting 25% to 50% off development time.

But is it possible to have too much collaboration? "You can always have too much of a good thing, if it's unmanaged," Portelli says. "So you need to establish access controls — you don't want everyone able to make changes. Sometimes unfettered collaboration needs to be cut off." In other words, in a corporate IT environment, he says, "you want a blend of the open-source practices and corporate practices."

MORE RESOURCES

Check out our Development Knowledge Center for news, opinion columns, events and tutorials:

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Antarctic Data Center Uses ColdFusion

ANTARCTICA – Storing and maintaining the mountains of scientific data that Australia's Antarctic researchers generate isn't a job for the faint hearted, but that's the challenge the Australian Antarctic Division Data Centre has undertaken.

The Australian Antarctic Treaty requires all data, such as statistics on flora, fauna, weather and marine life, to be publicly available. So the data center has developed an online central repository – actually an interconnected collection of 30 databases – that can be queried on the Web.

Based on Oracle Corp.'s database suite, the repository sits on a Sun Microsystems Inc. server running on Solaris 8.

The database holds about 500GB of data. Linkages that cross-reference the data and allow queries across all of the databases were developed using Macromedia Inc.'s ColdFusion Web application language.

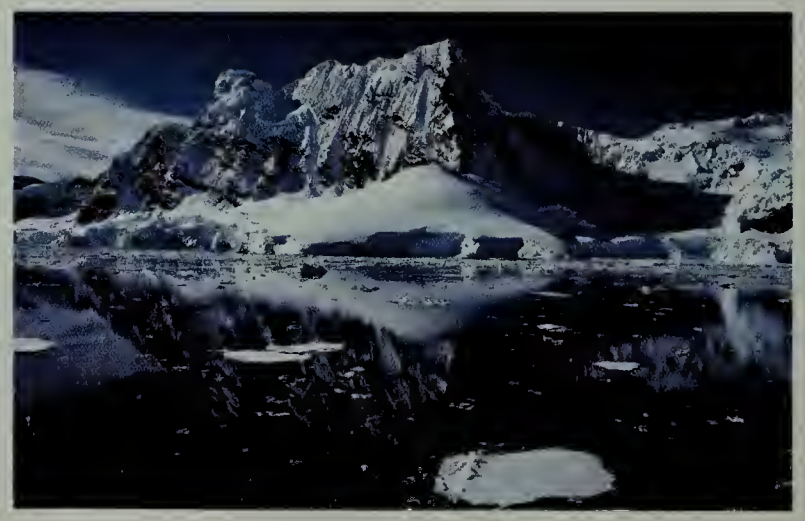
Recently, the center decided to also use ColdFusion for all of its front-end database development needs, says data center manager Lee Belbin.

"[ColdFusion] is faster than PL/SQL, which is what Oracle uses, and it's faster and more robust than Java," he says.

The latest version of ColdFusion MX includes Java support, allowing the database team to write applications in the ColdFusion programming language but have them translated into Java, Belbin says.

Future plans include a field-trip database system, which will allow members of expedition parties to post information about the condition of the various base stations, such as whether they need cleaning, repairs or more toilet paper.

– Nadia Cameron,
Computerworld Antarctica



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June 10-13, booth 1437
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June 18-20, booth 4419

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XACML

DEFINITION

Extensible Access Control Markup Language (XACML) is an XML-based language, or schema, designed specifically for creating policies and automating their use to control access to disparate devices and applications on a network.

BY RUSSELL KAY

MAINTAINING security on their networks is critical for all companies. One primary tool that every network needs is access control — the ability to carefully define and enforce which users have what type of access to specific applications, data and devices.

When the network was contained within a single building or campus, the problem was relatively simple and generally handled by software that was hooked into the operating system. But today's networks involve interconnected segments distributed across the country and around the globe, and many of these are also joined to the public Internet.

The growing use of XML as the common mechanism for exchanging data makes it simpler and easier to find and use data from external sources. Applications can call upon automated, remotely based Web services to add new capabilities. But who's in charge? Access control has become harder to manage at the very time it's more important than ever.

One answer lies with two specialized variants of XML — Security Assertions Markup Language (SAML) and XACML. SAML defines how identity and access information is exchanged and lets organizations convey security information to one another without having to change their own internal security architectures [QuickLink 32137]. But SAML can only communicate information. How to use that information is where XACML comes in.

The language, which uses the same definitions of subjects and actions as SAML, offers a vocabulary for expressing the rules needed to define an organization's security policies and make authorization decisions. XACML has two basic components.

The first is an access-control policy language that lets developers specify the rules about who can do what and when. The other is a request/response language that presents requests for access and describes the answers to those queries.

XACML provides for fine-grained control of activities (such as read, write, copy, delete) based on several criteria, including the following:

- Attributes of the user requesting access (e.g., "Only division managers and above can view this document.")
- The protocol over which the request is made (e.g., "This data can be viewed only if it is accessed over HTTPS.")
- The authentication mechanism (e.g., "The requester must have been authenticated using a digital device.")

QUICK STUDY

Strengths

XACML was designed to replace existing, usually application-specific, proprietary access-control mechanisms. Prior to the new language, every application vendor had to create its own custom method for specifying access control, and these typically couldn't talk to one another. The first implementation of XACML was created by Sun Microsystems Inc. in Java and is available at *http://sunxacml.sourceforge.net*. According to Sun, XACML has a number of advantages over other access-control policy languages:

- Security administrators can describe an access-control policy once, without having to rewrite it numerous times in different application-specific languages.
- Application developers don't have to invent their own policy languages and write code to support them; they can reuse existing, standardized code.
- XACML is intended to be primarily a machine-generated language. XACML creators expect that easy-to-use tools for writing and managing XACML policies will be developed, since they can be used with many applications.
- XACML can accommodate most access-control policy needs and also support new requirements as they emerge.
- A single XACML policy can be applied to many resources. This helps avoid inconsistencies and eliminates duplication of effort in creating policies for different resources.
- With XACML, one policy can refer to another. In a large organization, for instance, a policy for a specific site might reference both a company-wide policy and a country-specific policy.

History

XACML was developed by a team that included people from Entrust Inc., IBM, OpenNetworks.org, Quadrasis Inc., Sterling Commerce Inc., Sun and BEA Systems Inc.

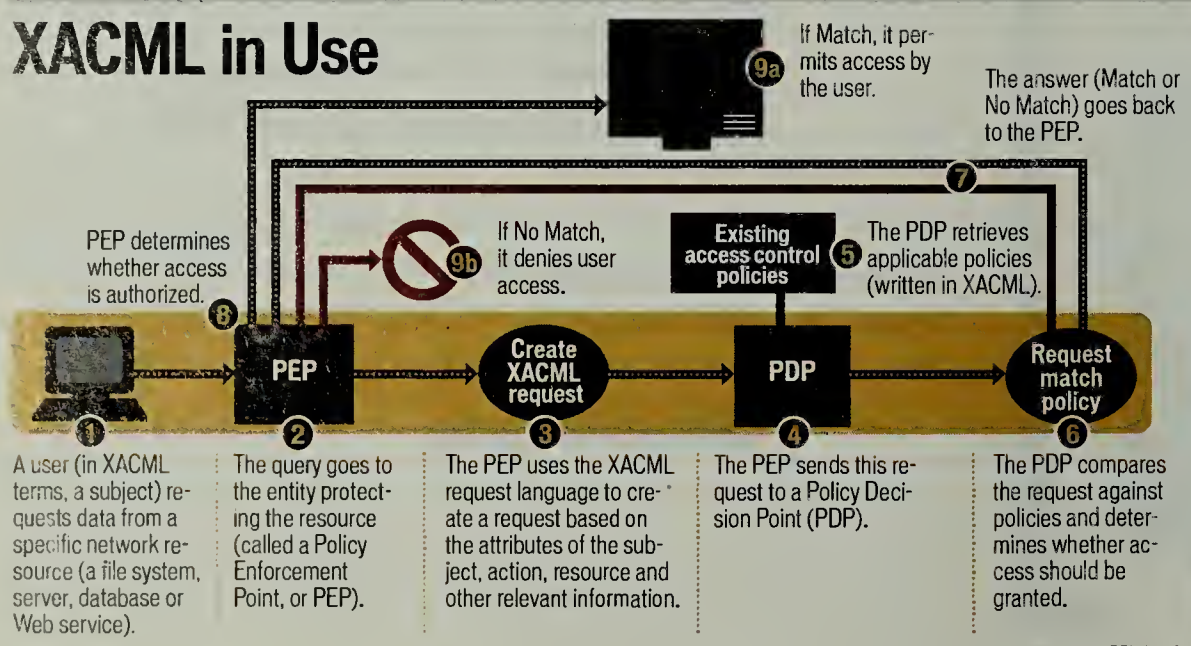
In February, XACML was adopted as a standard by the Organization for the Advancement of Structured Information Standards. ◗

Kay (russkay@charter.net) is a Computerworld contributing writer in Worcester, Mass.

An XACML Glossary

ACTION: The type of access that is being requested (for example, read, write, create, delete, logged).
ATTRIBUTE: A specific characteristic of a subject, resource, action or environment in which the access request is made. Attributes could include a user's name, workstation identity, security clearance, the file to which access is desired and the time of day.
BAG: An unordered collection of attributes, used for matching attributes to conditions. Bags may contain duplicate attributes or be empty.
CONDITION: A simple or complex Boolean function at the heart of a rule.
EFFECT: The result of an authorization: deny or permit.
POLICY: A single access-control policy expressed through a set of rules.
POLICY SET: A container of policies, including references to remote policies.
RESOURCE: A device, data element or file for which access is requested.
SUBJECT: The person or computer making a request.
TARGET: A set of simplified conditions for the subject, resource and action that must be met for a policy set, policy or rule to apply to a given request.

XACML in Use



SOURCE: SUN MICROSYSTEMS INC.

RESOURCE LINKS

For a list of online resources related to XACML, visit our Web site:

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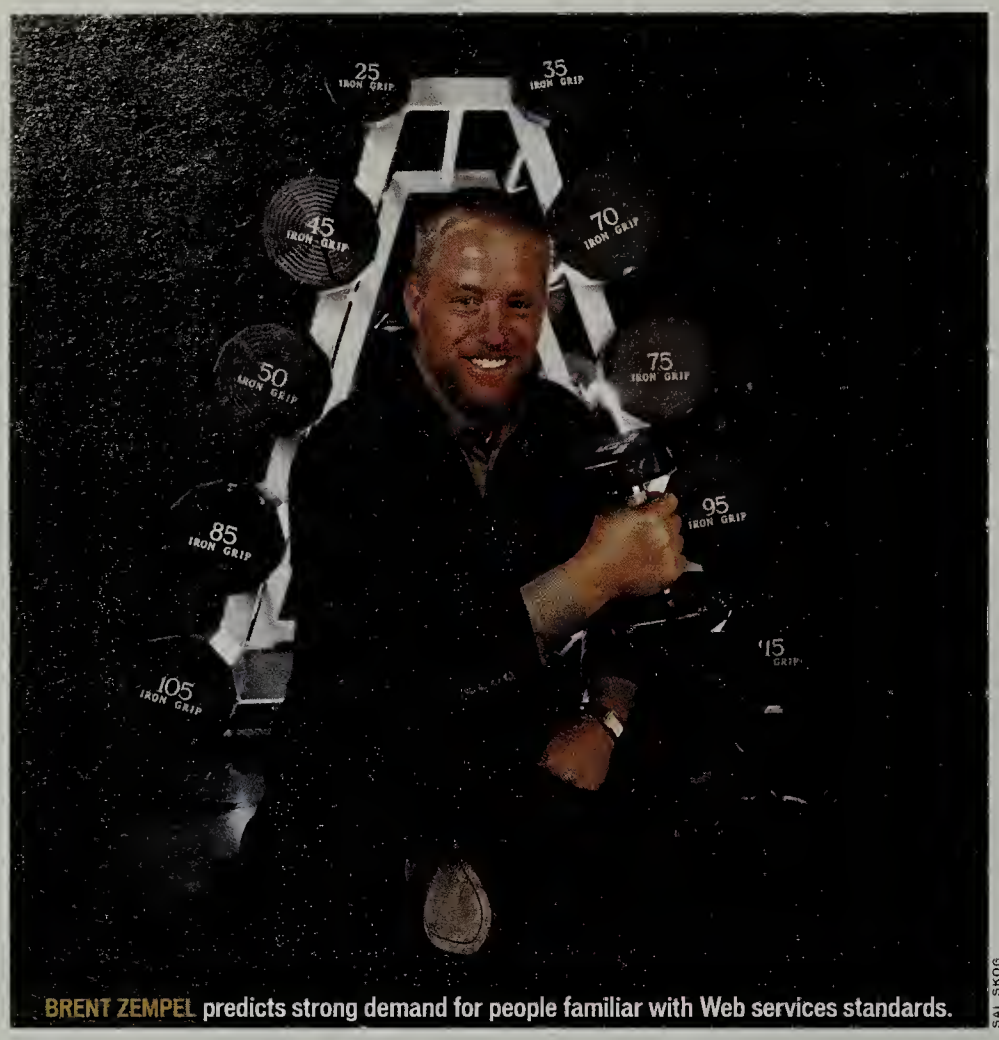

BRENT ZEMPEL predicts strong demand for people familiar with Web services standards.

SAL SKOG

Mixing Old and New Skills

It takes new specialist skills and old-fashioned programming to make it in Web services. By Amy Helen Johnson

IF YOU DON'T KNOW what SOAP is, you could be missing out on one of the critical new trends in application development: building Web services.

Knowledge of Simple Object Access Protocol and its extended family of protocols, languages, frameworks and tool kits is necessary for IT professionals to create these code packages, which perform real-time operations and exchange information over the Internet.

"Five years from now, it's definitely something that developers will want on their résumé," says Brent Zempel, CIO at Life Time Fitness Inc., a health and nutrition services company in Eden Prairie, Minn. "It will set them apart from other developers."

Skills

Wesley Bertch, director of information systems at Life Time Fitness, says the company looks for candidates with knowledge of Web architectures, Internet technologies and Java 2 Enterprise Edition. Those developers are familiar with component-based applications, which are the foundation of Web services, he says.

Key skills for building Web services interfaces include knowledge of XML and SOAP, Bertch says. Research from Stamford, Conn.-based Gartner Inc. adds to that list the J2EE and Microsoft .Net platforms, the Java and C# languages and the Visual Basic .Net development environment.

But these aren't the core capabilities developers need in their portfolios, according to a recent Gartner report. Many Web services components will be legacy applications wrapped in Web services interfaces. Programmers still need a firm grounding in established programming languages like C++, Cobol, Visual Basic and widely used business applications like Oracle Forms and IBM's CICS.

That need for expertise in older business technologies was important when Swiss Interbank Clearing Ltd. was developing Web services, says Thomas Grutter, head of the IT department at the intrabank services provider. The Zurich-based financial firm uses Cobol applications and newer client/server software based on object-oriented programming techniques. The diversity of the underlying programming languages meant that each Web services project required separate specialists familiar with the dissimilar technologies.

In terms of skills, Web services programmers are old-fashioned developers with extra technical knowledge, says Doug Falk, CIO at National Student Clearinghouse. The Herndon, Va.-based nonprofit consortium of colleges and universities provides an electronic registry of current student and alumni records. "One of the things we learned along the way was that once you get over the terms and standards, it really comes back to developing basic applications," he says.

Training

Falk says finding training programs that teach Web services technologies was pretty easy. He picked the top developer on his nine-person team and sent her to a three-day Java course offered by Sun Microsystems Inc. and a one-day SOAP class offered by SysCon Media Inc. in Montvale, N.J. Other team members engaged in informal self-education projects, using books and online materials to learn about topics such as XML schemas.

But experience trumps certifications, says Gary Lien, a systems architect at Life Time Fitness. "Having a certification doesn't mean anything in terms of real-world experience dealing with distributed applications," he says.

Job Market

There's noticeable demand for Web services managers and programmers at companies around the world. For example, some recent job postings at Monster.com included openings at a TV entertainment company in Los Angeles, a geographic information systems data provider in Dublin and a telecommunications company in Hong Kong.

CAREERS

Swiss Interbank's Grutter notes that companies have passed through the "new toy" phase of the emerging technology. The focus is now on writing production applications. "Web services must be paired with a business need," he says.

Salary

Although IT managers agree that demand for Web services programmers is rising, there's no consensus on whether these skills translate into higher salaries, only that they're "definitely valuable," says Zempel.

The European market, says Grutter, won't necessarily pay bonuses to applicants who list Web services project experience on their résumés, because unemployment has brought down salaries about 10% overall.

But in the U.S., Falk places a 10% premium on hires with Web services experience. However, he says he wouldn't offer any more than that because he places more weight on developers' core application programming skills than on knowledge of Web services. A transaction involves the Web services interface for only a short period of time, he explains. Once the data is consumed by the business application, it turns into a normal transaction, where established coding skills still mean the most, Falk says.

"When you get down to it, you need someone with good skills at designing applications," says Falk. ▶

Johnson is a Computerworld contributing writer. Contact her at amy-helen@pobox.com.

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The Next Chapter

Predictions: U.S. programmers will be limited to sensitive, niche applications, while the bulk of programming will be done offshore. And Web services will run amok.

■ ANGST-FREE MERGERS

Within five years, Web services will become the de facto standard for dealing with systems consolidation following mergers and acquisitions. Web services have the potential to cut the time to consolidate business systems in half, thereby accelerating the expected return from the merger or acquisition. With Web services, changes to or integration of existing systems can be done in a more orderly fashion — without the user angst that usually occurs with postmerger consolidation.

Norbert Kubilus, partner, Tatum CIO Partners LLP, San Diego

■ MAINFRAME SECURITY

One unpublicized challenge for Web services is security for the mainframe, where 70% of all corporate data resides. With the advent of Web services on the host, the mainframe is much more vulnerable to corruption from outside forces. As companies realize this, or as instances of mainframe security breaches greatly increase, you'll see more companies roll out mainframe security measures before participating in Web services initiatives.

Koen Bouwers, CEO, Consul Inc., Acton, Mass.

■ THE ASTEROID HITS

Software development in the U.S. will be extinct by mid-2006, with gradual job losses much like the U.S. textile industry experienced in the last quarter of the 20th century. Better development tools, cheaper labor and quality methodologies are making it more attractive to develop software overseas. The only software development that will be left in the U.S. will be for niche applications, new products and highly sensitive strategic applications.

Jon C. Piot, chief operating officer, Impact Innovations Group LLC, Dallas

■ B2B PHOENIX

Industry-specific "Web services networks" will rise from the ashes of the e-marketplaces of the dot-com era. They'll be similar to the late, sometimes lamented e-marketplaces, only better in just about every way.

Ross Altman, director of consulting, Electronic Data Systems Corp.

■ DISRUPTIVE TECHNOLOGY

Within three years, Web services will have a highly disruptive impact on the software market. Vendors that are either unwilling or unable to componentize their applications in a flexible manner will see substantial losses of market share. Noncompliant applications will be gradually marginalized by early 2005.

Bernhard Borges, Distinguished Engineer, IBM Business Consulting Services

■ ONE MAN'S TIMELINE

2003: Application development is simplified and becomes highly automated.
2004: Software writes more lines of code than humans do.
2005: Software maintenance costs drop and no longer impede business advances.
2006: IT productivity in developing applications triples from the previous year, due to automated code generation, reallocation of staff and consulting resources, and a laser focus by senior developers on the aspects of application development that are unique and mission-critical.

Alan Fisher, chairman, Iron Speed Inc., Mountain View, Calif.

■ DATA OVERLOAD

There are two dirty little secrets about Web services. One, they'll never be the Swiss Army Knife of the enterprise. Instead, they'll be just one tool in the integrator's toolbox. Two, Web services' power to make quick connections among myriad companies will open the data floodgates and dramatically increase the problem of information overload. As a result, data integration will top every CIO's to-do list by 2005.

Bob Zurek, vice president of advanced technology, Ascential Software Corp., Westboro, Mass.

■ DIVISION OF LABOR

Over the next three to five years, IT departments will specialize more on developing Web services for specific functions such as accounting and billing, while business departments will take on development of Web services for actual applications such as order entry, inventory management or claims processing.

Why? Because Web services tools will become as simple as Microsoft Office tools are today. The high-level editor tools will evolve toward the orchestration of services and will be usable by knowledge workers.

Eric Newcomer, chief technology officer, Iona Technologies PLC, Waltham, Mass.

■ OUT OF CONTROL?

By 2004, low-level concerns about security and interoperability of Web services will be replaced by high-level concerns about organizational control. Chief technology officers will be faced with a rising tide of Web services that are different in implementation and performance, have no central point of registry and begin to duplicate functionality.

Roman Stanek, CEO, Systinet Corp., Cambridge, Mass.

■ SELF-AWARE SOFTWARE

Agents -- software components with a sense of self — will replace Web services as the next layer of abstraction in software development. By 2006, agent software will be the dominant design principle for software development.

Charles Stack, CEO, Flashline Inc., Cleveland

MORE PREDICTIONS

Industry expert Grady Booch says that by 2007, software "will be developed and maintained through collaborative development environments consisting of thousands of moving parts that are never turned off."

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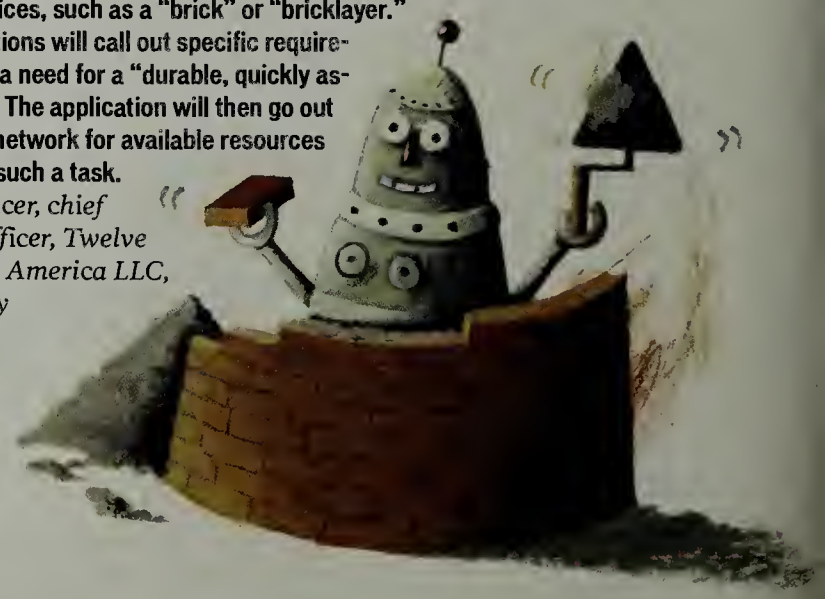
One Brick Wall, Please

The future of application programming is the concept of goal-based methods. No longer will an application have simple requirements for objects or services, such as a "brick" or "bricklayer." Future applications will call out specific requirements such as a need for a "durable, quickly assembled wall." The application will then go out and query the network for available resources to accomplish such a task.

— Steve Spencer, chief technology officer, Twelve Horses North America LLC, Salt Lake City



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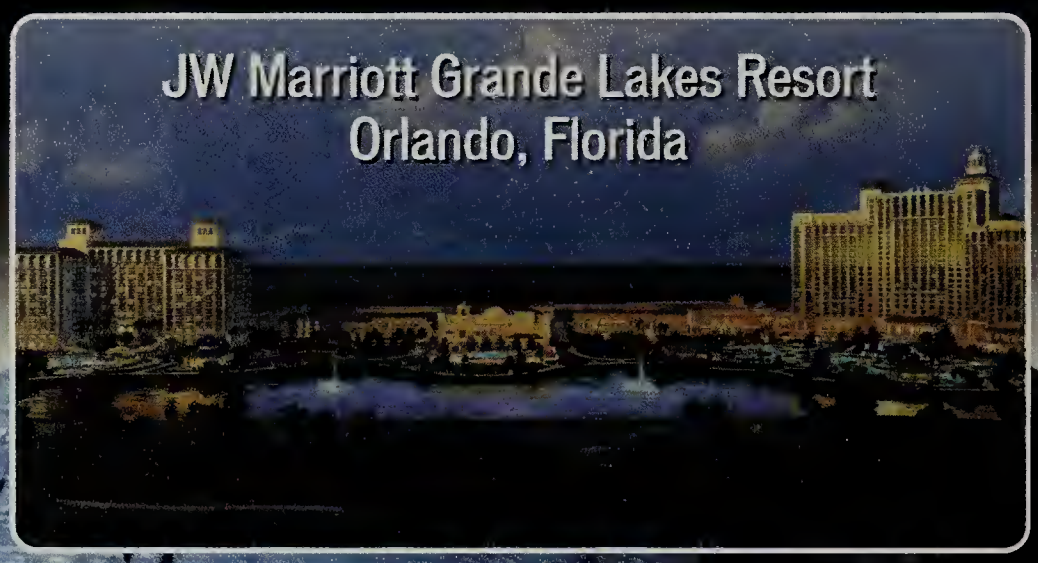

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Diversity in IT Careers

When the Information Technology Association met earlier this month for the annual Workforce Convocation, there were two critical items for consideration – the state of the IT workforce and the report of a Blue Ribbon Panel on Diversity.

In its annual survey of 400 hiring managers, ITAA found that the employment bounce back predicted a year ago didn't bounce. However, the same hiring managers say the downsizing era seems to be at an end. At year-end 2002, 10.2 million people were employed in IT in the United States – about even with employment figures for 2000. And just over 400,000 new jobs are planned for 2003 – slow but steady growth compared to the exponential growth of the past. The key skills needed are in programming/software engineering, technical support to capitalize on new IT solutions and enterprise management implementation and improvement. Nine of 10 workers will support banks, insurance companies, manufacturing companies or other non-IT businesses.

In the midst of this maturing of the IT workforce, the ITAA also issued three priorities with regard to diversity. According to Bob Knowling, chairman of SimDesk Technologies and chairman of the ITAA panel, the Blue Ribbon Panel's priorities aren't "very provocative." However, Knowling is challenging IT leaders and human resources professionals to take provocative action. "The only way I have ever seen a company change its face is through the will of the CEO and board," says Knowling. "The rest of the work in this report is window dressing If there isn't support and commitment at the top, including making sure you have charged executives with performance improvement in this particular area and link their pay to improvement.

"We – in this report – are on spot with the diagnoses and have to admit that these are merely practical steps," adds Knowling. "There will be more than 400,000 new jobs this year. We must have the dialogue that this is a business imperative. Left to our own devices, we fill the jobs around us with people who look like us – it's an orientation, not racism. But I've seen first-hand what can happen when the executive suite reflects that commitment to diversity. The organization grows by leaps and bounds when women and people of color show up."

The second priority in the report is to increase corporate outreach and mentoring. To assist, the Blue Ribbon Panel issued a list of best-in-class examples. Specifically, the committee called for establishing professional forums that bring together diverse IT professionals and provide support to such groups as Black Data Processing Association, Women in Technology, the National Association of Female Executives and the Society for Hispanic Professional Engineers.

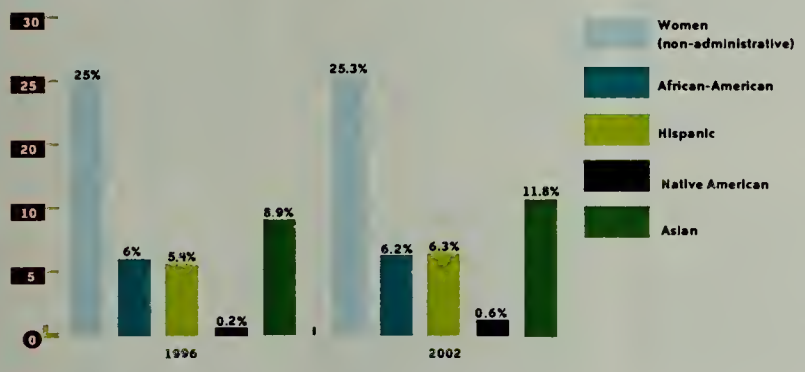
The final priority, fostering stronger partnerships with colleges and universities, deals with the pipeline of talent and the future. "We've seen some incremental improvements for women and Hispanics over the past eight years, and we've seen improvement in the number of women and minorities occupying seats in undergraduate IT-related studies," Knowling says. "However, thes enrollment figures aren't translating to placement in the professio The result is that we have a mass of people who are opting out of IT and choosing other fields not because they don't want to be an engineer but because they don't have access."

Among the barriers identified in pursuit of an IT career is th perception that the profession is one of isolation/working alone, 24/7 and instability. Reality, according to the report, is that creatin and innovating are team efforts, that there is a direct line betwee IT development and business performance, and that the majority of organizations are committed to a balance between work and personal life.

For the full report and best-in-class action steps, go to www.itaa.org/workforce.

Blue Ribbon Panel Report on Diversity

Demographic representation by percentage of total IT professionals
Source: ITAA 2003



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Opening for a Software Engineer to design, develop, test internal appls using VB, HTML/DHTML, ASP, Javascript, VBScript, ActiveX, IIS, etc. under Windows OS; evaluate new methodologies and develop plans for improving existing systems; customize and modify appls per user reqs; maintain documents and prepare programming specs; train users in application usage. Require: MS or foreign equiv. in CS/ Comp Engg & 2 yrs exp in IT. F/T position. Salary commensurate with experience. Resume to: HR, Learning Express, Inc., 29 Buena Vista Street, Ayer, MA 01432.

SOFTWARE ENGINEER wanted by IT Consulting Co. in Houston, TX. Must have degree & exp. Respond by resume only to: Mr. M. Guest, G/S-#10 Creek Resources Corp., 200 W. Trower Blvd, Ste 4, Mannford, OK 74044.

Matrix Management Systems, Inc., is looking for:

Programmer Analysts:
Should have a bachelor's degree in computer science/related field with 3+ years of experience in the following: Java, JDBC, J2EE, XML, EJB, XDI, Oracle, Cold fusion, Clear Quest, VC++, DB2, CICS, COBOL, Rational Rose, WinRunner and LoadRunner

We accept foreign education equivalent of the degree, or the degree equivalent in education and experience.

Send Resume to Attn: HR, 932D, Atlantic Ave, Hoffman Estates, IL 60194.

Logic & Physical Designer wanted to plan & dvlp s/ware projects. Will dsgn multi-dimensional analysis s/ware, provide consulting svcs to mgmt, staff, customers: dvlp, analyze, implmt analytical & computational techniques & methodologies for solution of complex problems. BS in Comp Sci reqd. Send resumes to Beniamino Barbieri, PhD, ISS (USA), Inc, 1602 Newton Dr, Champaign, IL 61826. No calls.

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COMPUTER PROGRAMMERS (2D-3D GRAPHICS) - A Boston-area company engaged in the design, development, and sale of state-of-the-art software that enables the communication of 2D and 3D technical data across computer networks, has an immediate need for two (2) highly skilled Computer Programmers (2D-3D Graphics). These unsupported, mentor-level positions involve the programming and implementation of software and algorithms which simplify, compress and transmit 2D and 3D technical CAD data, from input format specification to final presentation to the user. Minimum educational requirements include a Bachelors degree in Computer Science, Mathematics, or other relevant major. Minimum experience required is eight (8) years industry experience as a senior-level programmer/ developer of 2D-3D CAD/CAM-related systems. Specifically required is the demonstrated ability to program high quality software systems for high-cost-per-error environments (JIT supply chains, geometric surface milling, etc.). Also required is the demonstrated ability to develop algorithms which transform mathematical geometric representations into computer-manipulable tessellations. Additionally required is the demonstrated ability to develop compilers for geometric data. Further required is the demonstrated ability to develop commercial CAD/CAM-related software for UNIX-based platforms. Finally required is the demonstrated ability to optimize and configure TCP/IP network communications to deliver geometric data. Base salary is $90,100 per year, together with three (3) weeks annual vacation, full health and dental plans, and other industry-competitive benefits. Qualified applicants respond with two (2) copies of resume only to: Case # 200201322, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114. An EOE/MFHV.

Consultant Software Engineer to serve as an expert technical resource across functional organizations to perform functional analysis for major projects supporting several corporate initiatives by analyzing and designing these projects. Will apply in-depth understanding of the business for which the application is designed including establishing and monitoring project plans. Will oversee and establish the project development life-cycle by providing support and expertise throughout all phases of project completion. Will develop and design applications as well as work with a database team to drive data or database design for major projects and subsystems. Will also maintain external/user group relationships, manage vendor relationships, and work directly with the user community for project definition on critical projects. Will work across functional organizations to address and provide technical evaluation estimates on technology initiatives for the company. Will initiate projects or strategy discussions with users or external groups, bringing issues to resolution. Will act as a primary liaison for business units to resolve various project and technology issues. Will serve as a technical leader on resolution of corporate-wide business needs technology projects. Will be responsible for performing testing/QA, creating system test plans for complex modules and applications, and planning and conducting system testing and user acceptance testing. Requires Bachelor s degree in Computer Science, Engineering, Mathematics, or Physics and four (4) years experience in job offered OR four (4) years experience in software development. Candidate must also possess demonstrated exp in Oracle and Informix database analysis and design and demonstrated expertise developing datawarehouse applications. Salary - $90,500/yr. Mon-Fri, 9:00AM-5:00PM. Submit two copies of resume to Case #: 200116228, Labor Exchange Office, 19 Staniford St., 1st fl., Boston, MA 02114. EOE. Applicants must be eligible to accept full-time employment in U.S.

Lead Software Engineer. To lead a team of software engineers responsible for development and maintaining database products using SQL, C++ and Visual Basic to be used by Chinese and Japanese speaking customers. Will code the conversion routine between DBCS and Unicode set by using C++ to support Chinese and Japanese database systems and translate database messages from English to Chinese and Japanese. Consult with Chinese and Japanese customers with respect to the database products. Must have bachelor or foreign equivalent degree in computer science, computer engineering or related field. Must have 2 ½ years experience in writing programs in Chinese and Japanese computer codes. Fluent in spoken and written Chinese and Japanese. 40hrs/wk. 8:30 am to 5:30 pm. $83,388/yr. Employer Paid Ad. Send resumes to MDCD/ESA, P.O. Box 11170, Detroit, MI 48202-1170. Reference No. 210355.

Market Research Analyst sought by New Jersey-based s/ware consulting firm to research, analyze, design, and implement mktg strategies and business policies in IT sector. Must have a Bach or equiv in Comp Sci. or Electronics, with 5 yrs exp in mktg and s/ware tehnologies. Respond to: HR Dept., AK Systems, Inc., 100 Metroplex Drive, Suite 303, Edison, NJ 08817. Email: natalya@aksystems-inc.com

System Administrator: Design, implement, Intel based servers/ workstations w/OS of Windows 2000, XP. Configure & route Linksys routers and switches & Proxy Firewalls. Maintain NFS, WINS & RAID Array System. Provide maintenance & back-up/restore for servers using Backup Exec. Maintain company's website and software applications. Req. Bachelor Degree or equivalent in Information Technology, CIS or related field. Must be proficient in Backup Exec., DNS, FTP, Windows 2000 Server, XML, SQL Server, DHCP. 40hr/week, 9-5. Contact Law Offices of Jing Dong, P.C. at 1800 Century Blvd., Suite 915, Atlanta, GA 30345.

Market Research Analyst II: Conduct mkt research for computer products & svcs to determine potential, maintain & improve sales & mkt penetration. Establish, design & administer formats for research & analysis, prepare reports & analyses, & use to determine strategy & focus. Train & supervise staff & junior analysts. Follow up to determine effectiveness of methods & efforts of competitors. BA or equiv + 1 year. Respond to VP, HR, En Pointe Technologies, 100 N Sepulveda Blvd, 19th Fl, El Segundo, CA 90245.

Software Engineer, Sr. - Project mgmt & tech. support of MS Exchange application hosting svcs, design & develop MS Exchange products, interface architecture to back-end relational server database development for front-end user interfaces for Web & Windows apps. B.S. or equiv. in Computer or related Sci + 2 yrs experience. Must be MS certified. Send resume to Software Engineer Position, Intermedia.net, Inc., 800 California St., Ste. 200, Mountain View, CA 94041.

Mechatronics seeks software developer, engineers involved in developing Knowledge Based Engineering software and tools, deploying KBE/CAD/CAM/CAE tools and methodologies. Applicants must have minimum BS with some exp. Apply at jobs@mechatronics-us.com

IT Professionals is a small but stable company. We are looking system/programmer analysts to design & administer web applications & web enabled data analysis. Require BS. Exp. in VC++, COM, Mainframe GUI, Crystal is plus. Please send resumes to pete@itprofs.net. EOE.

CW030519E/W/MW 2

SolutionsIQ seeks DB App. Engr. for HQ office in Bellevue, WA. DESC: Dsgn, dev, & impl. RDBMS, UIs, components, & apps. to meet bus. reqs. & objs. Anlyz. existing sys. & dev. strategies & solns. to opt. bus. logic or flow. Prov. configuration mngment. Conduct sys. arch. & dsgn reviews. Port & migrate data from var. d/b, & plats. Communicate functional & tech. specs, reqs, & features. Write stored proc. & triggers & queries. Util. SQL, VB, C/C++, C#, ASP, ASP.NET, ADO.NET, VBScript, Jscript, HTML, COM/DCOM, XML, XSLT, IIS, & Win o/s. REQS: BS in Engr, CS, Math, or Physics + 3 yrs. exp. dsgn, dev, & impl. RDBMS, UIs, components, & apps. util. SQL, VB, C/C++, ASP, VBScript, Jscript, HTML, COM/DCOM, XML, IIS, & Win o/s. Prem. sal + benes. Pls. reply to S. Hantschell, Job # SIQ-215, 1260-116th AVE NE, Ste. 100, Bellevue, WA 98004.

Seeking qualified applicants for the following positions in Memphis, TN: Senior Systems Programmer. Serve as project/team leader. Devise procedures to solve complex problems with systems/applications. Requirements: Bachelor's degree* in computer science, MIS, engineering or related field plus 5 years of experience in systems/applications development. Experience with RDBMS; software design; and Java and/or C++ also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

Programmer/Analyst needed to design and implement multi-tier applications using COM+, VC++, integrate with MS project, MSSQL server, and other RDBMS. Send resumes to IT@Shrader.net or contact Craig Shrader at Shrader Engineering Co. (713) 465-6502 Fax.

System Administrator: Install, config., manage HTTP, FTP, SQL, Mail & DNS Servers, & enterprise messaging syst. Develop & implement operating & maintenance procedures for Web-related data ctr. equip., backup & remote monitoring procedures, using applicable network protocols. Develop, config., monitor, manage security measures for IS & networks, incl. firewalls, VPN & antivirus syst., & monitoring & mgmt tools. Oversee syst., database & metabase backup & mgmt. Must be MS Cert. Professional. Respond SysAdmin Position, intermedia.net, inc., 600 California St., Ste. 200, Mountain View, CA 94041.

Cap Gemini Ernst & Young U.S. LLC is currently seeking individuals to fill Consultant and Manager positions in multiple locations nationwide. Please apply on-line at http://www.us.cgey.com/careers/eRecruit.asp using Job Ref#1181 for Consultant or #1182 for Manager. CGEY is an Equal Opportunity and Affirmative Action employer. All qualified applicants will be considered for employment without regard to race, religion, color, national origin, age, sex, marital status, sexual orientation, disability or status as a Vietnam-era, special disabled and other covered veteran status. NO PHONE CALLS.

Principal Software Engineer to participate in every phase of analysis, design, implementation, and integration of our proprietary systems to meet our worldwide technology strategy. Specifically, will participate in the Core Technology Group in our e-Business Division to help drive the delivery of B2B applications, infrastructure support of Encina-based applications, and guide overall architecture and design decisions. Will participate in the delivery of new authentication and authorization framework to unify several business units. Will focus on scalable and distributed systems. Will utilize C++ Java, SGML, XML, XSL-T, SOAP, IBM's WebSphere, and communication protocols like HTTP, HTTPS, and IIOP. Requires Bachelor's degree in Computer Science, Engineering, Mathematics, or Physics and three (3) years experience in job offered OR three (3) years experience in developing client/server applications. Candidate must also possess demonstrated expertise in OOD (Object Oriented Design) and Design Patterns; demonstrated expertise in architecture of scalable and distributed systems using middleware tools; and demonstrated expertise delivering B2B applications using XML over HTTP. Salary: $90,500/yr; Mon-Fri, 9:00 AM-5:00PM. Submit two copies of resume to Case #: 200116225, Labor Exchange Office, 19 Staniford St., 1st fl., Boston, MA 02114. EOE. Applicants must be eligible to accept full-time employment in U.S.

Senior Software Engineer-Work with company's marketing and technical staff to specify, design, implement, test, and document an XML storage engine built on top of the Berkeley DB embedded database engine. Design data management systems deployed by customers. Implement an XPATH query processor, optimizer, and execution engine. Design and implement XML data dictionary using embedded data management facilities provided by Berkeley DB. Work with customers and early adopters to ensure the product meets market demands. Conduct normal best-practices engineering operations, including design and code reviews and test planning and evaluation. Meet with customers, in coordination with company's sales/marketing groups, to present technical details of the XML storage system and assist in product sales and deployment. Requirements include a Bachelor's degree or equivalent in Computer Science, an Engineering discipline or related field and six years of work experience in the job offered or related field of software engineering. Applicants must have unrestricted authorization to work in the United States. Salary $100,000/year. 40 hours/wk. Respond with two copies of resume to Case #200201663, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

Network & Systems Administrator needed at client sites to dsgn, implmt & maintain LAN/WAN n/works using Novell Netware, Win NT/2000, SCO Unix & configure CISCO, Extreme, Nortel, Cabletron Enterasys Make Routers/Switches, TCP/IP, Sonet, DNS, DHCP & others. Must be CNE & CCNA certified. Apply to: Global Consultants, 25 Airport Rd, Morristown, NJ 07960.

Senior Software Engineer - Burlington, MA: Perform significant software product design, developmt, implementation, & testing for eBusiness applications. Design & implement DB schema in a transactional environment for Oracle & MS SQL Server DBs. Design, implement & performance tune software to generate DB schema from models & representations of data structures, using MOF & OMG stds to implement data models; the framework to map objects to relational DBs, using UML & Design Patterns for object-oriented design; & the persistence layer to provide access in a robust, OO manner & transaction support to the DB from other product components. Use RPC & RMI to enhance the API providing remote access to other core APIs. Work closely w/product mgmt & other engineers to translate high-level customer reqmts into product functionality, involving DB systems, transaction techniques, compiler technology, multi-threaded programming in Java & C++, distributed systems computing, & other related technologies. Develop & document the reqmts in the Functional Specification. Estimate effort required to implement specified functions & track progress against the estimate. Test the software implementation to assure quality, & support the implementation during the quality assurance phase. Minimum Reqmts: Master's degree or equiv. (will accept foreign Master's degree or Bachelor's degree + 4 yrs of progressive exp. as equiv. to a Master's degree) in Computer Sci. or Computer or Software Engr'g, + 3 yrs of exp. in the job offered or in jobs meeting following reqmts: 3 yrs of exp. in software product developmt in multi-threaded Java & C++ for distributed systems, 3 yrs of exp. in DB schema design & implementation in a transactional envir. for both Oracle & MS SQL Server, 3 yrs of OO design using UML & Design Patterns, & 1 yr implementing data models using the MOF & other OMG stds. Exper. may be gained concurrently. Hours: M-F, 9 am-5 pm. Rate of Pay: $97,000/yr. Please submit 2 copies of resume to: Case # 200201551, Labor Exchange Office, 19 Staniford St, 1st Fl, Boston, MA 02114.

Support Mgr. Dallas, TX. Manage team of support consults & provide backend support in deployment, installation & troubleshooting of Amtrix & TSIB; liaison w/develop team in integration, stress & load testing of Amtrix & TSIB (TradeSync Integration Broker). Apps & tools include Weblogic, Exceed, Amtrix & TSIB; Oracle 8i & 9i on Unix & WinXX OS. Req. BS comp sci or related field & 4 yrs exp in apps consulting, incl. 2 yrs w/AMTrix appl. integration, 1 yr exp leading or managing support consults. Resumes to: M. Williams, Viewlocity, Inc., 3475 Piedmont Road, Suite 1700, Atlanta, GA 30305.

Software Engineer. Design, develop, implement, test and maintain software applications in business/ manufacturing systems. Expertise in Client server and web development, MS Access, SQL server database, Visual Interdev, C++, VC++, MFC, Java, Javascript, ASP, COM/DCOM, DirectX, Socket programming, UML, Rational Rose, Windows NT & Unix. Requires BS in Comp. Sci. Engg/Rel field with 2 yrs exp. Wages: $66,000/yr, 40 hrs/wk, 8am-5pm. Send 2 resumes to: Case#200201474, Labor Exchange Office, 19 Staniford St. 1st Fl., Boston, MA 02114.

For over 20 years, **Syntel** employees across North America, Europe, and Asia have helped build advanced information technology systems for leading Fortune 500 companies and government organizations to improve their efficiency and competitiveness. Today, Syntel professionals are building rewarding careers by providing solutions in e-business, CRM, Web Design and Data Warehousing.

Come discover why Forbes magazine placed Syntel second on its list of "The 200 Best Small Companies in America" and Business Week ranked us #11 on its list of Hot Growth Companies.

Due to our rapid growth, we have immediate, full-time opportunities for both entry-level and experienced Software Engineers, Consultants, Programmers, Programmer/Analysts, Project Leaders, Project Managers, Supervisors, Database Administrators, Computer Personnel Managers and Computer Operations/Account Managers/Account Executives with any of the following skills:

Mainframe

- IMS DB/DC or DB2, MVS/ESA, COBOL, CICS
- Focus, IDMS or SAS

DBA

- ORACLE or SYBASE
- DB2

Client-Server/WEB

- Siebel
- Websphere
- Com/DCom
- Web Architects
- Datawarehousing
- Informix, C or UNIX
- Oracle Developer or Designer 2000
- JAVA, HTML, Active X
- Web Commerce
- SAP/R3, ABAP/4 or FICO or MM & SD
- Oracle Applications & Tools
- Lotus Notes Developer
- UNIX System Administrator
- UNIX, C, C++, Visual C++, CORBA, OOD or OOPS
- WinNT
- Sybase, Access or SQL server
- PeopleSoft
- Visual Basic
- PowerBuilder
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Some positions require a Bachelor's degree, others a Master's degree. We also accept the equivalent of the degree in education and experience.

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As a $180 million industry leader, we are able to provide our people with the kind of work environment, opportunities, benefits, growth potential and progressive training others can't match. We are looking for IT professionals with a minimum of 1+ years experience for the following job titles:

- PROGRAMMER/ANALYST
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- SYSTEMS PROGRAMMER
- DATABASE ADMINISTRATOR
- DATABASE ANALYST
- LAN ADMINISTRATOR
- SOFTWARE ENGINEER
- WEB DEVELOPER/ ARCHITECT
- DATA WAREHOUSING ARCHITECT
- IT PROJECT MANAGER
- BUSINESS ANALYST
- SAP FUNCTIONAL AND TECHNICAL EXPERTS
- HIGH LEVEL SOLUTIONS SALES EXECUTIVES
- QA/TESTER
- TECHNICAL RECRUITER

Our skill sets include:
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- E-COMMERCE
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- CRM - SIEBEL
- DATA MODELING

Contact the Corporate Headquarters for positions available in the following areas: Arizona, Colorado, Connecticut, Florida, Georgia, Illinois, Massachusetts, New Jersey, New York, North Carolina, Pennsylvania, Southern California, Texas, Virginia/ DC.

For consideration please reference Job Code: RIRCW15 and send your resume to: RCG Information Technology, Attn: National Recruiting, 379 Thornall Street, Edison, NJ 08837; FAX: (732) 744-3583 or email to: recruit@rcgit.com We are an Equal Opportunity Employer. M/F/D/V.

www.rcgit.com
RCG Information Technology

Software Professionals needed - Applicants possessing BS or equivalent and/or relevant work experience should apply. Experience in design, develop and implement custom application software solutions from concept to production is required. Duties include: review project plans to determine feasibility, budget cost and schedule. Applicant should have minimum of 4 years experience in Delphi and 1 year experience in Java, XML/XSL. Experience can be simultaneous. Work with some of the following: Delphi, Java, XML/XSL, XSLT, JDBC, Java Swing Oracle and SQL Server. Experience in government projects is preferable. Mail resumes, references and salary requirement to: Stellar Corporation, 594 Marrett Road, Lexington, MA 02421.

Programer/Analyst - Will analyze, design, develop, test, implement and maintain customized software applications in a client/server environment. May be used on multi-tier systems related to Internet/Intranet/ E Commerce. Must have Bachelor of Science in Computer Science, Math., Engineering or related. Must have 2 yrs exp. in job offered or 2 yrs exp. in Software development. Such experience must include J2EE. Must be willing to be assigned to un-anticipated client sites throughout the United States. Salary: $75,000/yr Hrs: 8:00am-5.00pm, 40/wk. Please send 2 copies of resume to: Case # 2002-01613, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114

DATABASE ADMINISTRATOR
Database Administrator to do logical and physical design of Oracle database; Code test and implement Oracle scripts applying knowledge of Database Management Systems; Calculate optimum values for Oracle database parameters; performance tune Oracle databases; Model Oracle database security; manage backup and recovery of Oracle databases; make changes to Oracle database applications using knowledge of Oracle Applications 11i, Oracle 8i, VeritasCluster, I-Watch & AppWorx. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or DBA, expertise in Oracle database administration which includes logical design, physical design, performance tuning, backup and recovery, coding of scripts, knowledge of Oracle Applications 11i, Oracle 8i, VeritasCluster, I-Watch & AppWorx. Salary: $80,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and relocation. Apply: Manager, Armstrong County Team PA CareerLink, 1270 North Water Street, PO Box 759, Kittanning, PA 16201, Job No. WEB326881.

Engineers – Web Hosting Infrastructure

CSC, Fortune 500 leader in management and information technology consulting, systems integration and outsourcing, is currently seeking an experienced professional for its Newark, DE office, to design and document web hosting solutions using iPlanet, Websphere and Weblogic web, portal and application server software as well as LAN networking (TCP/IP, DNS and firewalls). Establish operational specifications for the aforementioned software in a multi-platform web hosting environment. Provide a point for escalated support for the operations team on a 7x24 basis (8-10 hrs/month). Bachelor's or equivalent and 4 years of IT experience is required. Three of 4 years of required experience must include LAN networking. One of 4 years of required experience must include iPlanet web and application server and WebLogic application clusters with Apache/Tomcat servers.

CSC offers competitive salaries and excellent benefits. Please forward resumes to: **CSC, Attn: Human Resources, 400 Commerce Drive M/S 1SB6, Newark, DE 19713.** Reference job code **BS072803** in cover letter. EOE M/F/D/V.

HTTP://CAREERS.CSC.COM

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MAGNA INFOTECH consulting company is looking for Programmer/Analysts, Software Consultants and Software Engineers with experience in one or more of the following:
ERP: SAP, Baan Implementation, Tools, Admin
UNIX: C, C++, Shell, AIX, HP-UX, Solaris Admin, Networking
AS/400: RPG/400, COBOL/400, CL, BPCS, JD Edwards, Synon
WINDOWS: VC++, VB, PB, MFC, OLE/COM, Admin
REAL TIME: Microprocessor, RTOS Programming
INTERNET: Java, Javascript, CGI, Perl, WAP, Admin, Active X, ASP
DATABASE: Oracle, Informix, Sybase, DB2 Admin Developer 2000, Designer 2000

Sales Manager / Marketing Manager: must have at least 2 years of Sales experience, BA degree or foreign equivalent degree and basic computer skills. Multiple positions exist at various sites across the US. Please mail your resume to: Recruit. Dept. Ref. #CW05-03, Magna Infotech Ltd., 1 Padanaram Rd., Ste. 208, Danbury, CT 06811-4833.

ND based IT company has openings for Software Engineers & DBAs: (Multiple openings): Research, Analyze, Design, develop, test, diagnose, and implement various business applications.

Real time OS Vx Works, Networking Protocols, PeopleSoft, IPSEC, IKE, BAAN ERP, BAAN tools, SAP r/3 and ABAP/4, Oracle 8.x/9.x/11.x, Sun Solaris 2.8, Veritas Clustering, Oracle Utilities, Unix Shell Scripting, PL/SQL, Erwin Data Modeling/ Designing, Web Technologies like J2EE, JDBC/ODBC, Web sphere, EJB, COM/DCOM, C/C++, MS SQL Server, UNIX, J2EE Architect/Team-Lead experience in implementing financial applications on HP-Tandem Non-stop systems. Product Administration System SABLIME. Business Objects 5.1.5, Data Warehousing, Informatica - Power Center 5.1, SAS 8, Teradata Utilities, Erwin, Power Mart5.1 / PowerCenter 5, Data Junction, Cognos Impromptu 7.0, JD Edwards, WinRunner 6.0, Test Director 6.0, Silk, Load Runner, Rational Suite, SQA Suite.

DBAs must have experience in installation, migration, moving, set-up, monitoring and trouble shooting of various database applications. May require travel to client sites. Software Engineer $78,000 & up; DBA:$60,000 and up. Mail resume to 212, South 4th Street, Suite# 202, Grand Forks, ND 58201.

SOFTWARE ENGINEER
Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in MFG/PRO, Oracle, Symix, Dispatch-1 and Axiom. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of MFG/PRO, Oracle, Symix, Dispatch-1 and Axiom. Salary: $66,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Manager, Butler County CareerLink, Pullman Commerce Center, 112 Hollywood Drive, Suite 101, Butler, PA 16001, Job No. WEB327511.

SENIOR PROGRAMMER/ANALYST to analyze, design, develop, install, tune and upgrade CRM applications and Oracle databases for the telecommunication industry using Clarify, UNIX Shell Scripts, C, C++, Java, JDBC, JCL, COBOL, FTP, CICS and DB2 on Windows, UNIX and mainframe platforms; Provide Tier 3 production support and resolve vendor issues for traffic mediation systems using Xacct. Require: B.S. degree in Computer Science/ Engineering, or a closely related field with two years of experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Send resume to: Shilpa Chaudhry, Elite Solutions, Inc., 1670 Reserve Way, Suite 203, Decatur, GA 30033; Attn: Job AR.

SENIOR PROGRAMMER/ANALYST to analyze, design, develop, test and implement n-tier web-based application software in a client/server environment using ASP, Visual Basic, COM, COM+, DCOM, Active X, ADO, RDO, JavaScript, MTS, SQL Server, Oracle, MS Access, IIS, Visual Interdev and XML under Windows NT/2000 operating systems; Provide technical support with Peoplesoft HRMS and Financial modules using PeopleTools, SQR and PeopleCode. Require: Bachelor's degree in Computer Science, an Engineering discipline, or a closely related field with two years of experience in the job offered or as a Software Engineer. Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered. Send resume to: Sundeep Chaudhry, Elite Solutions, Inc., 1670 Reserve Way, Suite 203, Decatur, GA 30033; Attn: Job MP.

Computer Engineer - dsgn & develop financial software systems involving mgt info systems. Bch in Computer Science w/ 2yrs exp. Send resume to: Smart Solutions International, LP, 6555 N. Powerline Road, Suite 306, Fort Lauderdale, FL 33309.

SOFTWARE ENGINEER
40 hrs/week. 8:30 a.m. - 5:30 p.m. M-F. Job located in Northport, AL. Must have 5 years exp. in Job Offered. Research, design & develop computer software systems for business applications, applying principles of computer science & engineering. Analyze software requirements to determine feasibility of design. Evaluate interface between hardware & software, & between operational & performance requirements. Develop software system testing procedures. 8 yrs Grade School; 4 yrs High School; Bachelor's Degree in Computer Science or foreign equivalent. Send resume to: Mr. J. K. Goswami, Applied InfoTech, Inc., 501 Bridge Avenue, Northport, AL 35476, Phone (205) 758-1604.

Communications software co. in Westborough, MA seeks Senior Staff Engineer to design, develop and implement data communication and telecommunication systems source code, including development of portable real-time protocol embedded software using tools such as C/C++, Javascript and LISP. Must have Bach. in Comp. Sci. or equiv.; 2 yrs exp. in development of telecommunications software; knowledge of C/C++, Javascript, LISP, embedded protocol software, and network protocols (including MPLS, OSPF, BGP, RIP, H.323, ATM, FR, and O-UNI). Salary $93,500/yr. Submit 2 resumes to Case #200201632, Labor Exchange Office, 19 Staniford Street, 1st fl., Boston, MA 02114.

SOFTWARE ENGINEER to design, develop, implement and maintain web-based application software and databases using Oracle, MS SQL Server, ASP.NET, Oracle Forms, Pro*C, XML and COM+ under Windows and SUN Solaris operating systems. Require: M.S. degree in Computer Science/ Engineering, or a closely related field with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Send resume to: Murli N. Reddy, President, Charter Global Services, Inc., 5445 Triangle Parkway, Suite 190, Norcross, GA 30092; Attn: Job BA.

Software Professionals:
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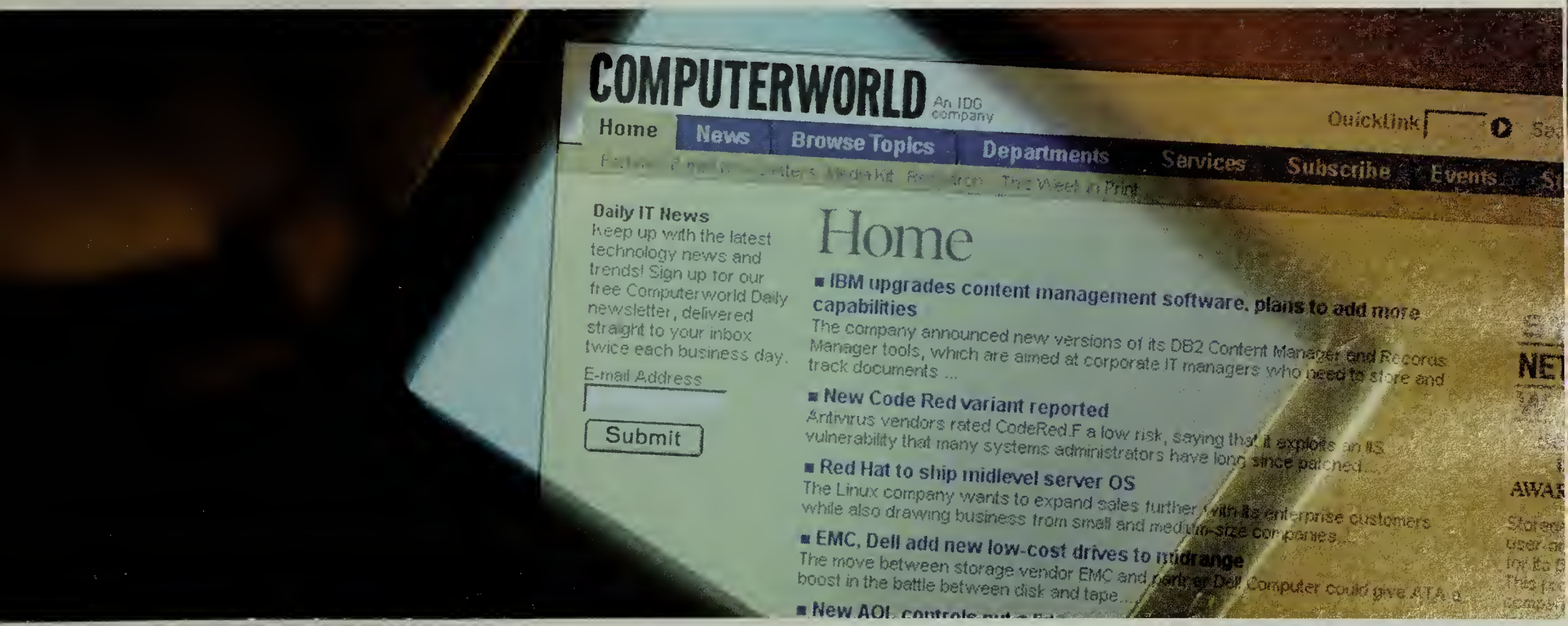

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Maryfran Johnson, editor in chief
(508) 820-8179

DEPARTMENT EDITORS

Don Tennant, News editor ..... (508) 620-7714
Craig Stedman, assistant News editor ..... (508) 820-8120
Julia King, Management editor ..... (610) 532-7599
Jean Consilvio, assistant Management editor ..... (508) 820-8562
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REPORTERS

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CONTRIBUTING COLUMNISTS

John Berry, David Foote, Pimm Fox, Michael Gartenberg, Dan Gillmor, Thornton A. May, David Moschella, Bart Perkins, Nicholas Petreley

CONTRIBUTING WRITERS

Mary Brandel, Amy Helen Johnson, Russell Kay, Sami Lais, Kathleen Melymuka, Deborah Radcliff

GENERAL INFORMATION

TELEPHONE/FAX

Main phone number .... (508) 879-0700
All editors unless otherwise noted below
Main fax number ..... (508) 875-8931
24-hour news tip line... (508) 820-7718

E-MAIL

Our Web address is **www.computerworld.com.**
Staff members' e-mail follows this form: **firstname_lastname@computerworld.com.**
For IDG News Service correspondents: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.**
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MAIL ADDRESS

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Terror Threats Spark IT, Physical Security Changes

Lehman Brothers adds access-control systems, safety kits

BY DAN VERTON

THE EVER-PRESENT threat of terrorism has spawned the adoption of some unusual workstation peripherals at investment firm Lehman Brothers Holdings Inc.

As part of a global program to improve security and lessen workforce anxiety in the wake of the Sept. 11 attacks, New York-based Lehman Brothers now deploys personal safety emergency kits with every PC and workstation it installs, officials said during an online conference last week.

The kits include a gas mask, safety goggles and a whistle "to draw attention to yourself if in the event of an evacuation you need to draw attention to yourself," said Ken Damstrom, global head of security operations at Lehman Brothers.

The distribution of the emergency kits is only the latest in a series of security-related steps that Lehman Brothers has taken, said Damstrom, who spoke as part of the Terror and Technology Online Conference sponsored by ID-Partners LLC in Washington.

Some of the moves predate Sept. 11, 2001. For example, prior to the terrorist attacks, Lehman Brothers began deploying a global access-control system developed by NexWatch, an Oak Creek, Wis.-based division of Honeywell International Inc. The technology integrates physical security monitoring for all of the firm's facilities in 23 countries, according to Damstrom.

The NexWatch system lets Lehman Brothers employees move among offices without hassles and enables corporate security officials to track what is happening in each facility, he said. It's also connected to the firm's fire alarm systems and to IT systems such as the company's e-mail applications.

In another project started before Sept. 11, Lehman recently completed the installation of a global closed-circuit television (CCTV) system that transmits data across its IT network infrastructure, Damstrom said. The CCTV setup is integrated with the access-control system and lets the firm's security team monitor events at offices in real time.

In addition, Lehman Brothers has installed radiation and bomb detectors at its Manhattan offices. But because deploying personnel to monitor all of these systems would be too costly, the firm is using its IT networks to centrally track images and data.

"You simply have to work smarter in today's world," said Ted Price, managing director and global head of security at Lehman Brothers. "It's not about the numbers of guards; it's about the intelligence and the training that you leverage."

> **"It's not about the numbers of guards; it's about the intelligence and the training that you leverage."**
>
> **TED PRICE**, GLOBAL HEAD OF SECURITY, LEHMAN BROTHERS

The company has also changed the way it approaches disaster recovery and business continuity. Its plan "is not written down," Price said. "We have no playbook." But, he added, Lehman Brothers has tried to build "the single best communication system so that we can get a hold of the key employees" if a crisis occurs.

Damstrom said the company uses Franklin, Tenn.-based Dialogic Communications Corp.'s Communicator software, which can transmit hundreds of crisis alerts and life-saving instructions simultaneously to cell phones, pagers and other devices.

Lehman Brothers also has internally developed software that lets workers use any PC to access their desktops from remote locations.

Continued from page 1

Linux Claim

noted that he would become more concerned if SCO's lawsuit against IBM were to succeed but said that's not a sure thing. "They haven't proven anything," Poole said. "Right now, I'm just amused."

But Brad Friedman, vice president of information services at Burlington Coat Factory Warehouse Corp. in Burlington, N.J., said SCO's legal threat "bears to be watched by people like ourselves who use Linux." The same applies to its suit against IBM, he said.

It's too early to determine if or how Burlington Coat will be affected, Friedman said. But he plans to seek legal advice to better gauge "the potential implications and what we should be doing about it, if anything."

Referring to the open-source intellectual property issues being raised by SCO, Tony Iams, an analyst at D.H. Brown Associates Inc. in Port Chester, N.Y., said it was "only a matter of time before some of these were tested in court."

But a key reason for SCO's legal onslaught could be the economic effect Linux is having on the company, Iams said. An upcoming D.H. Brown report comparing Linux distributions with SCO's UnixWare operating system shows that Linux is "better than or equal to UnixWare in their functional capabilities," he added.

Defensive Posture

Darl McBride, SCO's CEO, insisted that the company's actions are reasonable. "These are our crown jewels we're talking about," he said. "The world is not about stealing people's code, laundering it and saying everything's OK. In the end, what you could see come out of this is legal Linux."

For now, though, Linux vendors that continue to ship the operating system will do so "at their own peril," McBride warned. SCO is immediately halting sales of its own Linux releases, though the company said it will continue to support existing users and won't target them for any legal action.

SCO's legal fight could fail even if some of the company's source code did make its way into Linux, said Daniel Ravicher, an attorney who specializes in open-source legal matters at Patterson, Belknap, Webb & Tyler LLP, a New York-based law firm.

"The worst-case scenario is that some people have to have a pizza party and do some recoding" to replace any allegedly offending code, Ravicher said. "In the most likely scenario, [SCO has] no case with substantial merit."

George Weiss, an analyst at Gartner Inc., said SCO's campaign against Linux could discourage use of the operating system. But Weiss added that he hasn't seen anything like that happen since SCO filed its lawsuit against IBM.

Weiss said he has asked SCO executives to show him examples of specific Unix code in Linux, but they have declined to do so, citing the ongoing legal actions. "We really only have SCO's word for it, which they're attempting to make very compelling," he said.

In an e-mail interview, Linux creator Linus Torvalds said he would "love to hear what it is they consider infringing, since I'd like to go back and see where it got adopted."

Torvalds said it's possible to track the origin of any section of the Linux kernel. "We've got all the history available somewhere, and it should be pretty easy to show when something was added and what the lineage was," he wrote.

Robert McMillan of the IDG News Service contributed to this story.

SCO's Legal Gambit

JANUARY
The company announces at the LinuxWorld conference that it's creating a new division responsible for enforcing its position as the "majority owner of Unix intellectual property."

MARCH
SCO files a lawsuit seeking $1 billion in damages from IBM for allegedly using Unix features as part of its Linux services business.

MAY
The software vendor halts its own Linux shipments and warns corporate users of the operating system that they could be using SCO's code illegally.

LINUX VENDORS REACT

Read about how companies like Red Hat and SuSE are assessing SCO's legal claims:

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FRANK HAYES ■ FRANKLY SPEAKING

IT Delivers

DOES IT MATTER? By now you've surely heard about Nicholas G. Carr's article in the May 2003 issue of *Harvard Business Review*, "IT Doesn't Matter" [QuickLink 37990]. Carr's thesis is simple: Now that the IT infrastructure has been built out, you can't get sustainable competitive advantage from IT, because anything you can buy, your competitors can buy too. So there's nothing left for IT managers to do but cut costs and manage risk.

Scary, isn't it? No, not about IT — about Carr. Here's a big-deal business pundit who not only misunderstands IT's relationship to competitive advantage, but who also thinks he's discovered something new.

Carr *is* right about one thing: You can't get sustainable competitive advantage by buying IT products, services or information. And his logic and historical analysis on this point are dead-on. Like railroads and electricity before it, IT has become infrastructure — widely available, affordably priced and standardized. That means any competitive advantage you get just from buying IT will last only until your competitors buy the same products, services and information you just bought.

But, hey — that's not news! Every experienced IT (and MIS and data processing) manager over the past 40 years has doped this out.

Sure, vendors claim that their hot new products will revolutionize your business. They always have. But we all figured out soon enough that new hardware, applications, networks, protocols and programming languages don't give you a lasting business advantage over your competitors. Whatever you buy, they can buy. Whatever you build, they can build too.

Carr's great insight was common wisdom in the mainframe 1960s, the time-sharing 1970s, the PC 1980s and the Internet 1990s. You've *never* been able to get a sustainable competitive advantage directly from IT. Yes, technology can cut costs. But real competitive advantage, just from technology? It never lasts. Heck, it barely exists.

Does that mean IT doesn't matter? Then IT hasn't mattered for 40 years — since the days when IBM's System/360 introduced standardized hardware and software, and Ross Perot's EDS invented utility computing.

But IT does matter — or at least it can. You *can* get real business advantage with technology. You just don't get it from products, services and information.

You get it from processes, skills and execution — the same things that let any business differentiate itself in ways that don't involve IT.

Retailers understand the value of processes, skills and execution. They have to — they must choose the products they sell from exactly the same pool as their competitors. So Nordstrom differentiates itself from Wal-Mart through its business processes, its employees' skills and how those employees execute on those processes. And Wal-Mart differentiates itself with its own processes, skills and execution.

When IT is used most effectively, when it's really focused on the business it serves, it reinforces and amplifies that differentiation. It maximizes the advantages a company gets from its business model. It improves processes, leverages skills and streamlines execution in ways that help a business deliver on its unique strengths. It helps Wal-Mart be Wal-Mart and Nordstrom be Nordstrom.

That's how you get competitive advantage.

If that sounds a little fuzzy, it's because every company is unique. That's why you've got to know your company inside and out if you want to deliver IT that truly serves the business. The kind of IT that doesn't come out of a shrink-wrapped box. The kind your competitors can't match by writing a purchase order.

It's as much about business and people — *your* business and *your* people — as about technology. But it *is* about technology.

And when that's what IT delivers, IT really does matter.

A lot. ◗

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

Round and Round

This department head wants a presence on the corporate intranet pronto – one for which a department staffer can control the links, even though no one on that staff knows HTML. Fish scrambles to set up a utility that will do the job and later checks the results. "The only link is titled 'Corporate Intranet,'" sighs fish. "That, of course, brings you right back to the home page from which the previous page was accessed!"

SHARK TANK

Thrilled

It's the early 1980s, and a business manager asks this programmer pilot fish to redesign a lengthy mainframe report so the summary page comes at the beginning, not the end. That will mean lots of work and twice the running time, fish points out – but manager is adamant. "Then the light bulb went on," fish says. "Every time the report was run, I tore off the last page and stapled it to the front of the report. He was thrilled."

And Getting Better

This dot-com's application service provider goes bankrupt, and no consultant will touch the 30-day deadline to bring the apps in-house. So internal IT goes to work and squeaks in under the deadline. A year later, management opts to outsource again. How will we recover if the new ASP goes bust? IT pilot fish asks. "No problem," boss says. "You guys should be good at this now."

Security First

This user can't remember a critical password, so pilot fish runs through a series of common passwords to help jog his memory. "He finally remembers it and tells everyone in the room what the password is," fish reports. "Then he says, 'I should have remembered that one. It's also my ATM access code.'"

Thanks a Lot

It takes months, but programmer pilot fish reworks this data access program so all employees can use it, not just one secretary. But now the secretary says she's more buried than ever. "I'm getting five times the number of requests for reports," she says. "Users tell me they think the program is wonderful. But they still come to me because I can generate the reports more quickly than they can."

Quality Control

It's this pilot fish's first day on the job as a quality control analyst in the IT operations center. She boots up her workstation, and the splash screen proclaims the department's slogan: "Comitted to Excellence." Fish points out the misspelling to her boss. "Yeah," boss says, "close enough. Everybody knows what you mean."

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